VOL. XLVIII. No.12
DECEMBER 1963

MECCANO MAGAZINE

1/3

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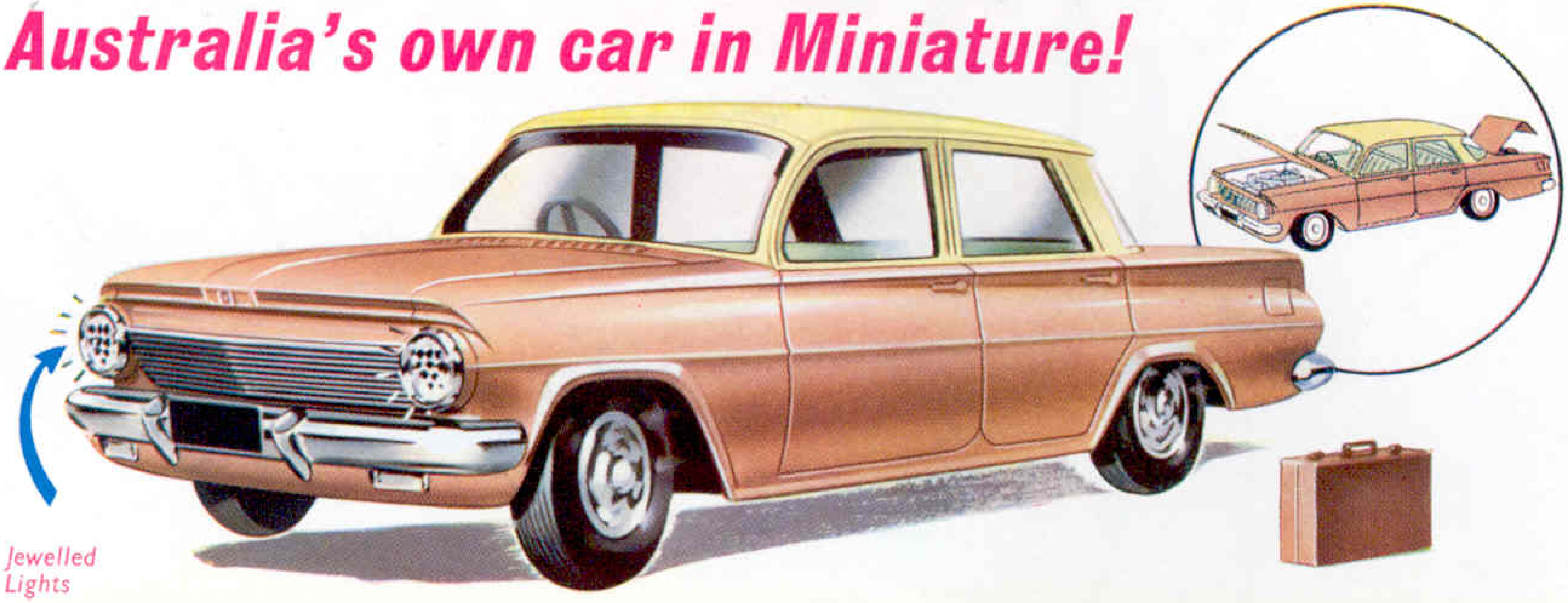

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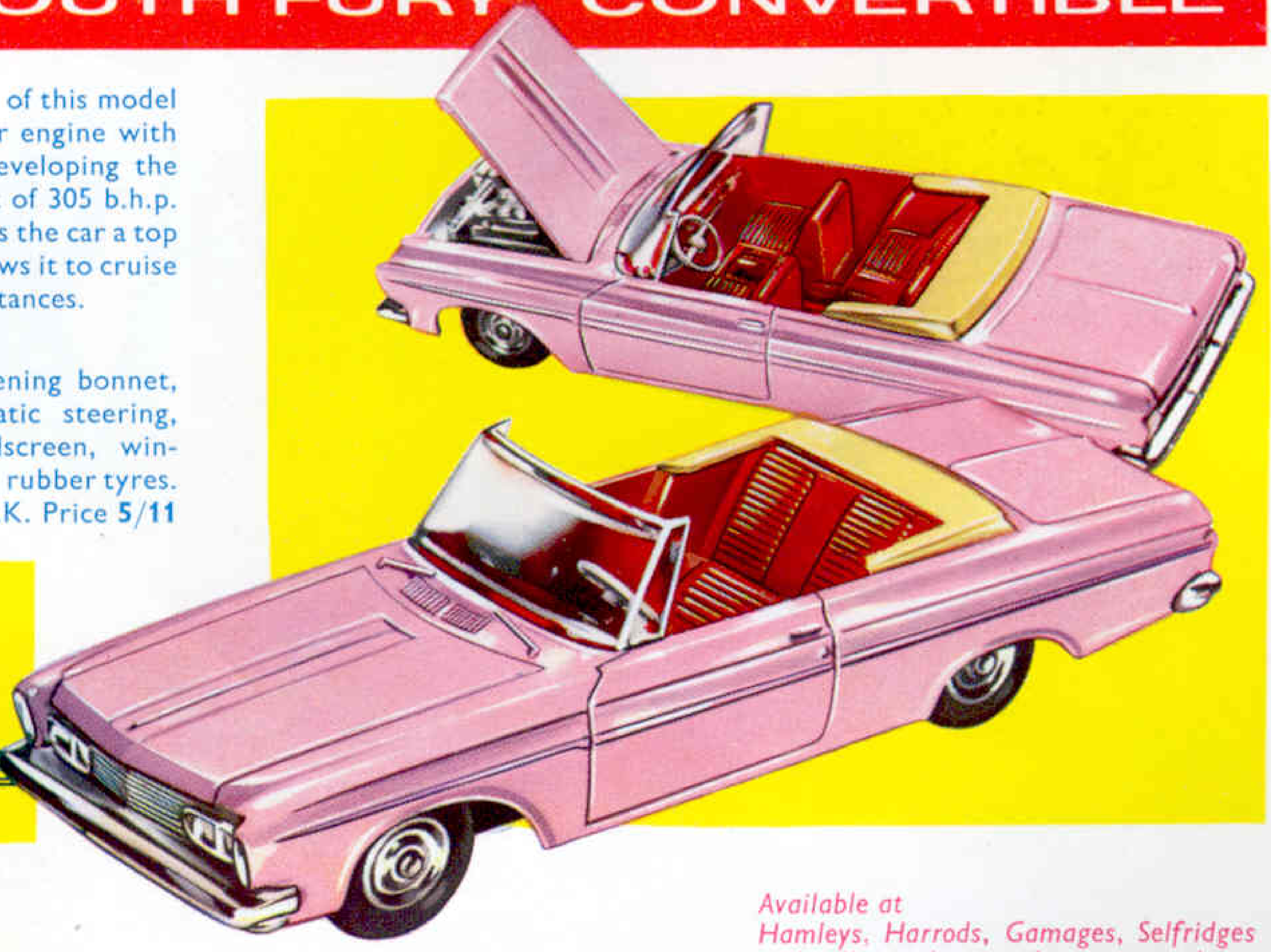

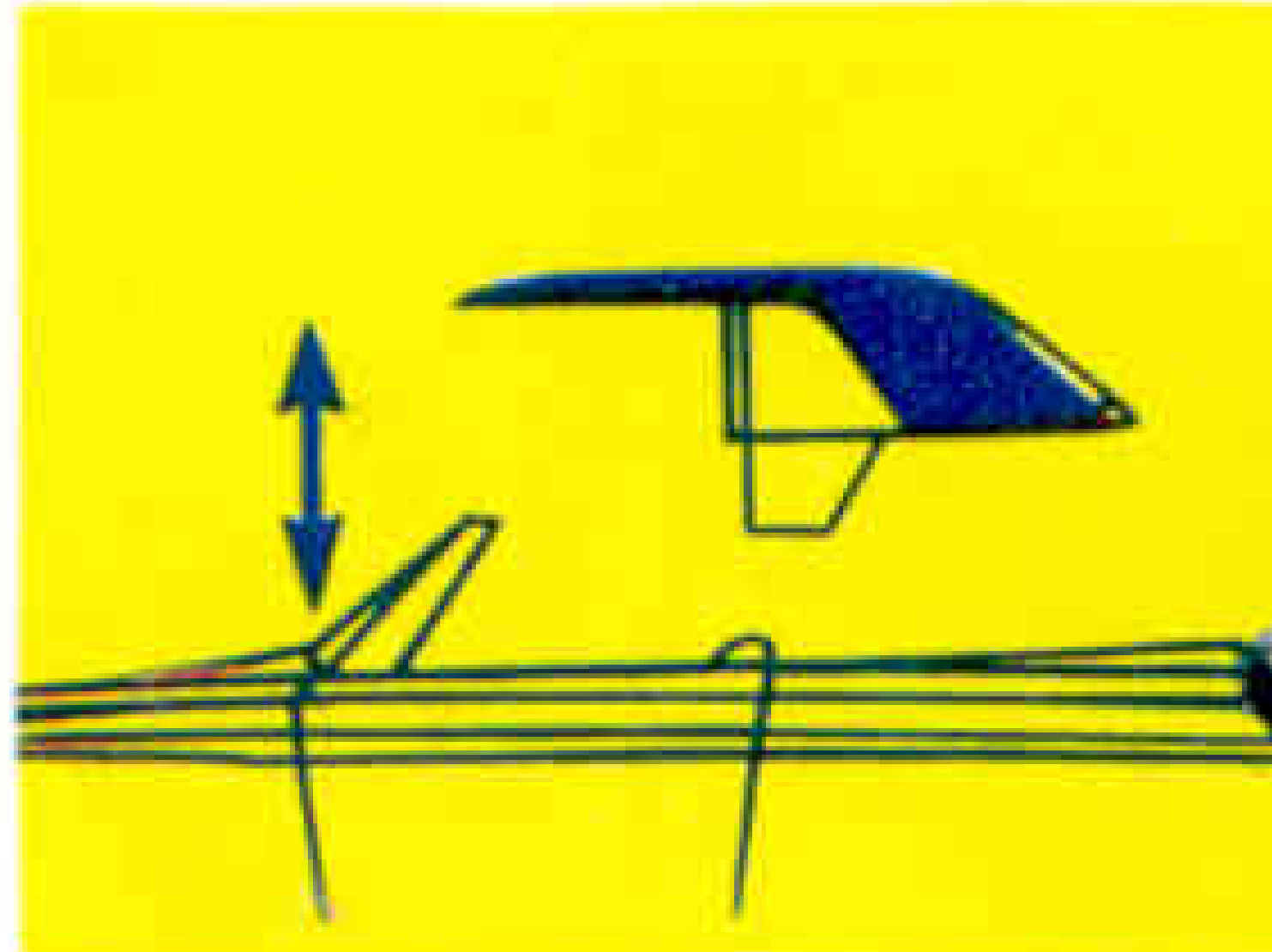

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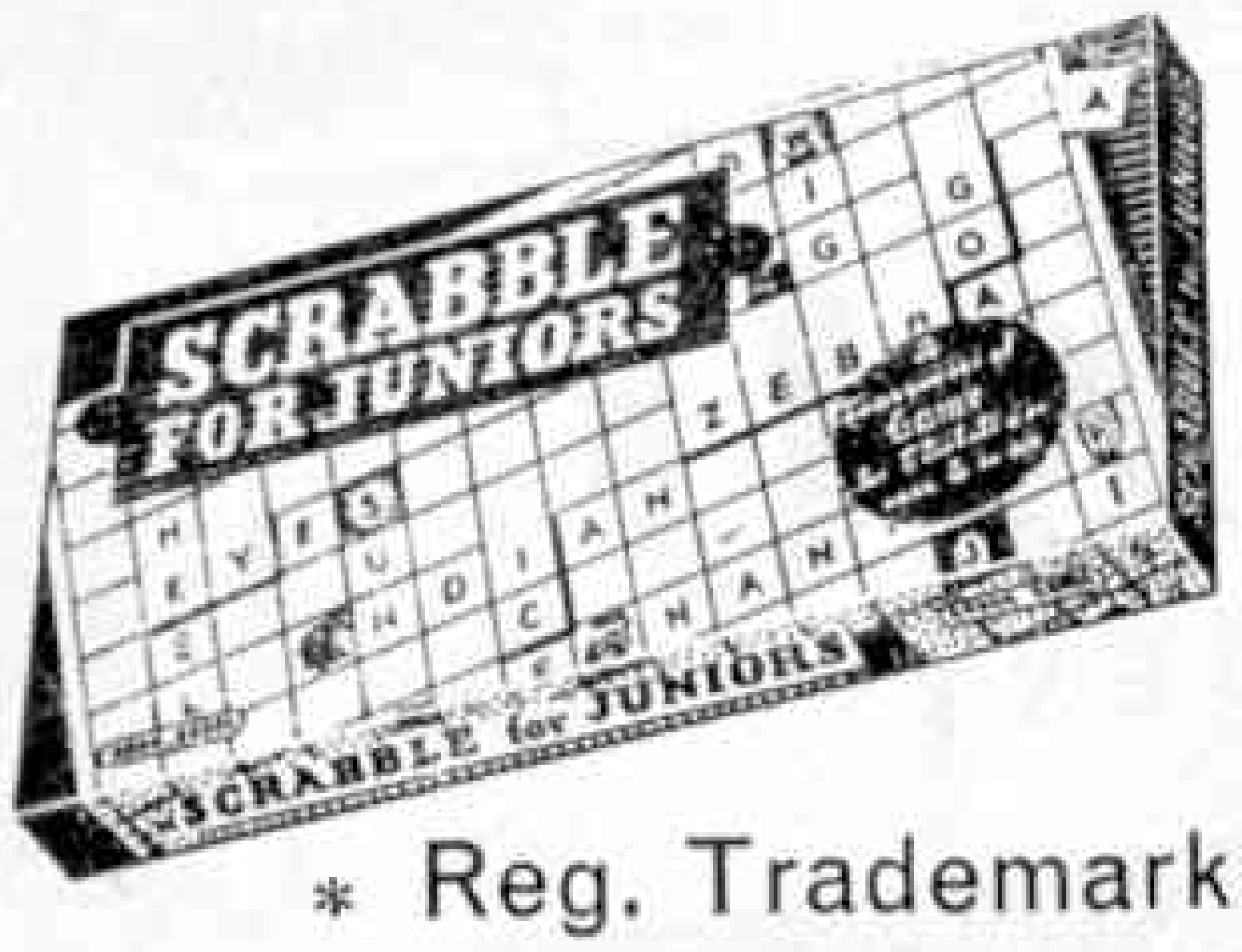

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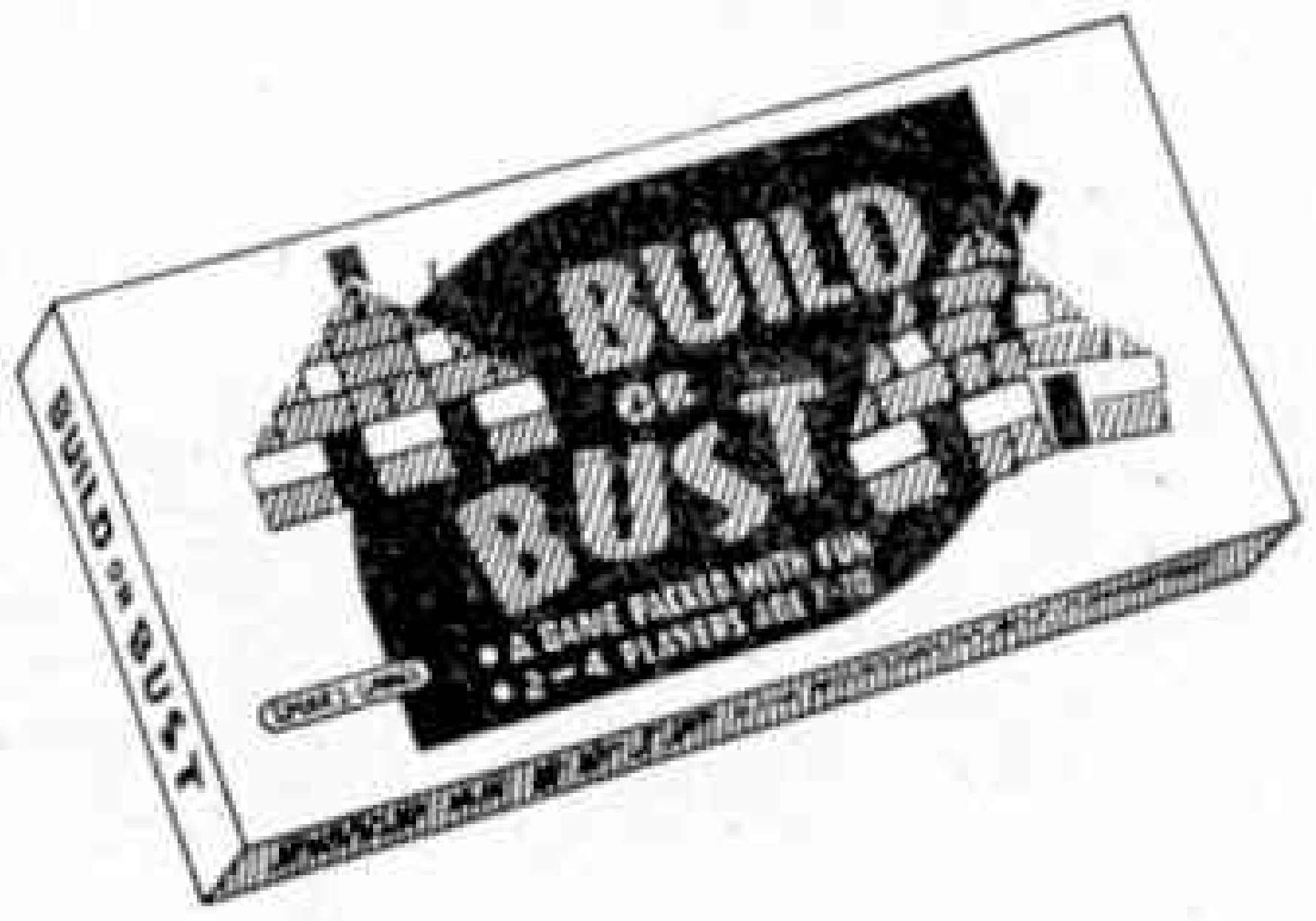

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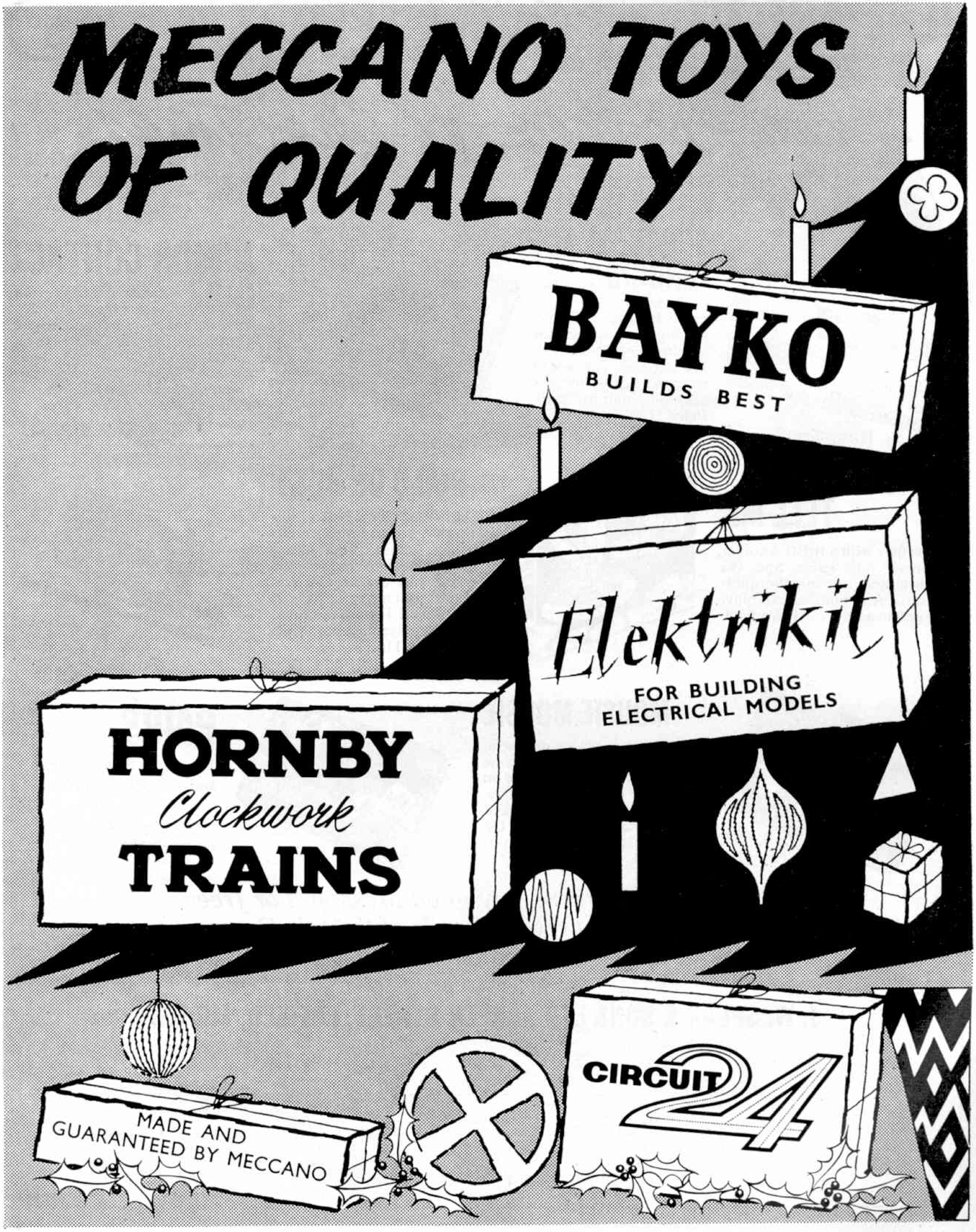

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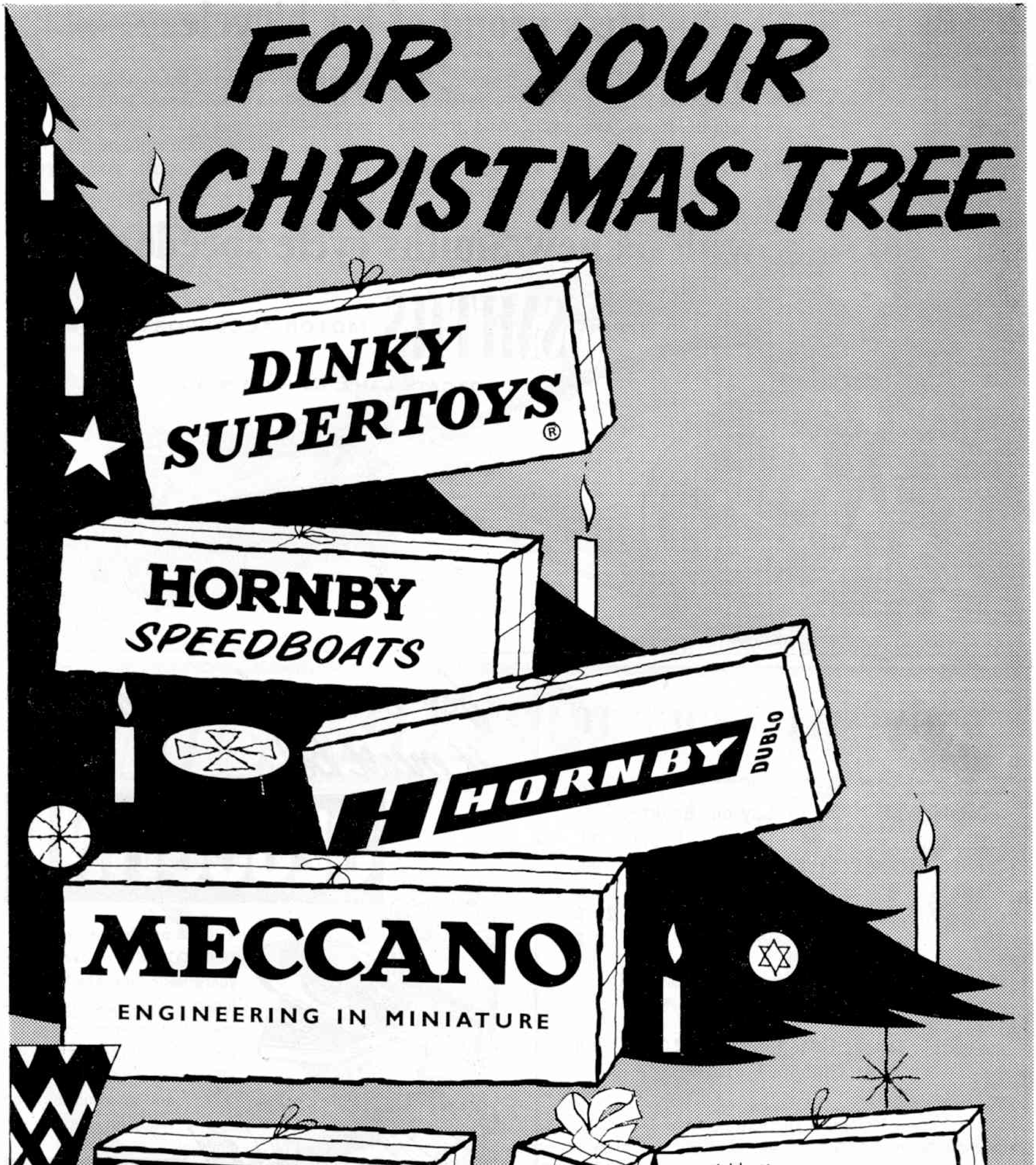
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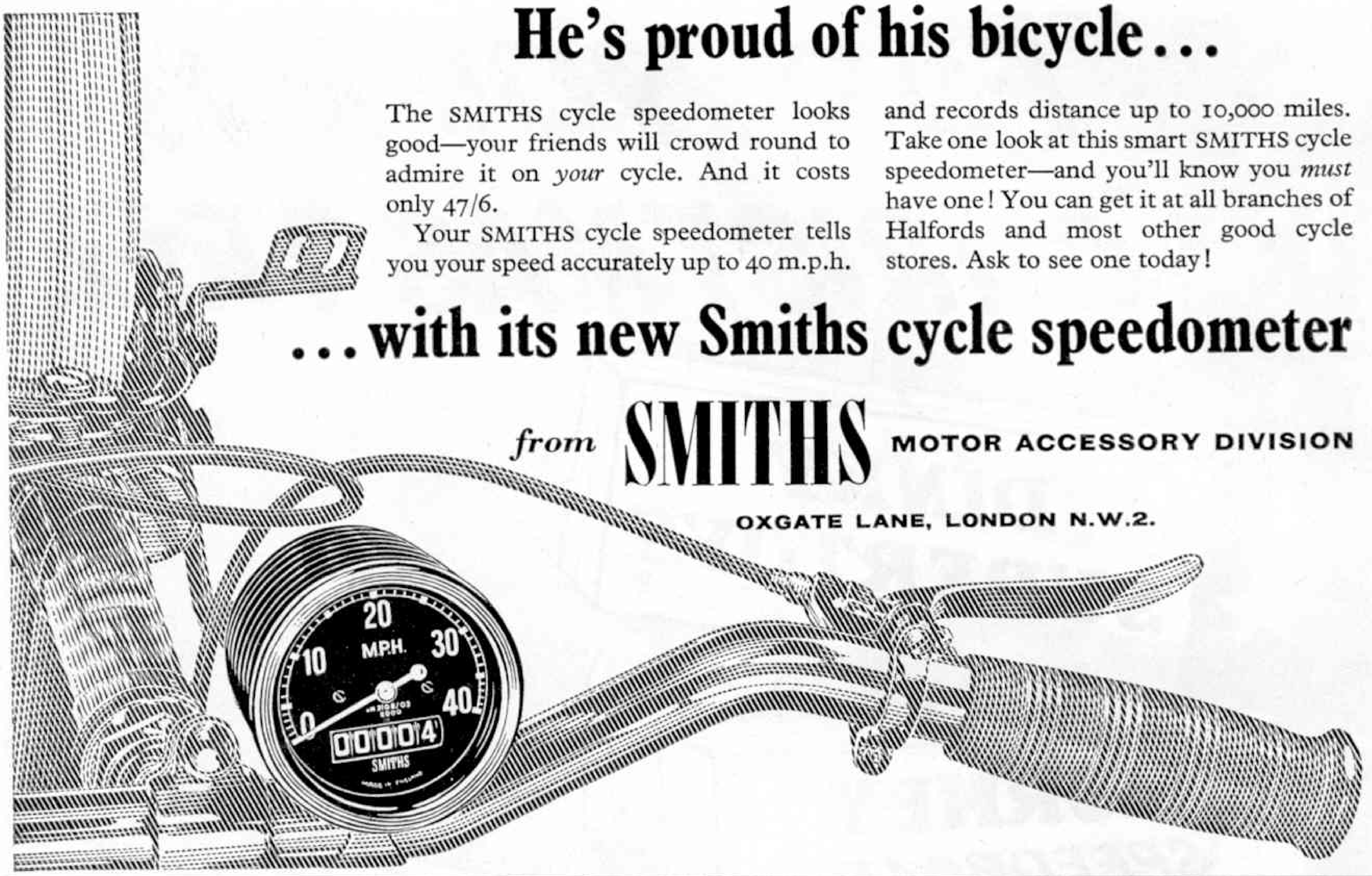

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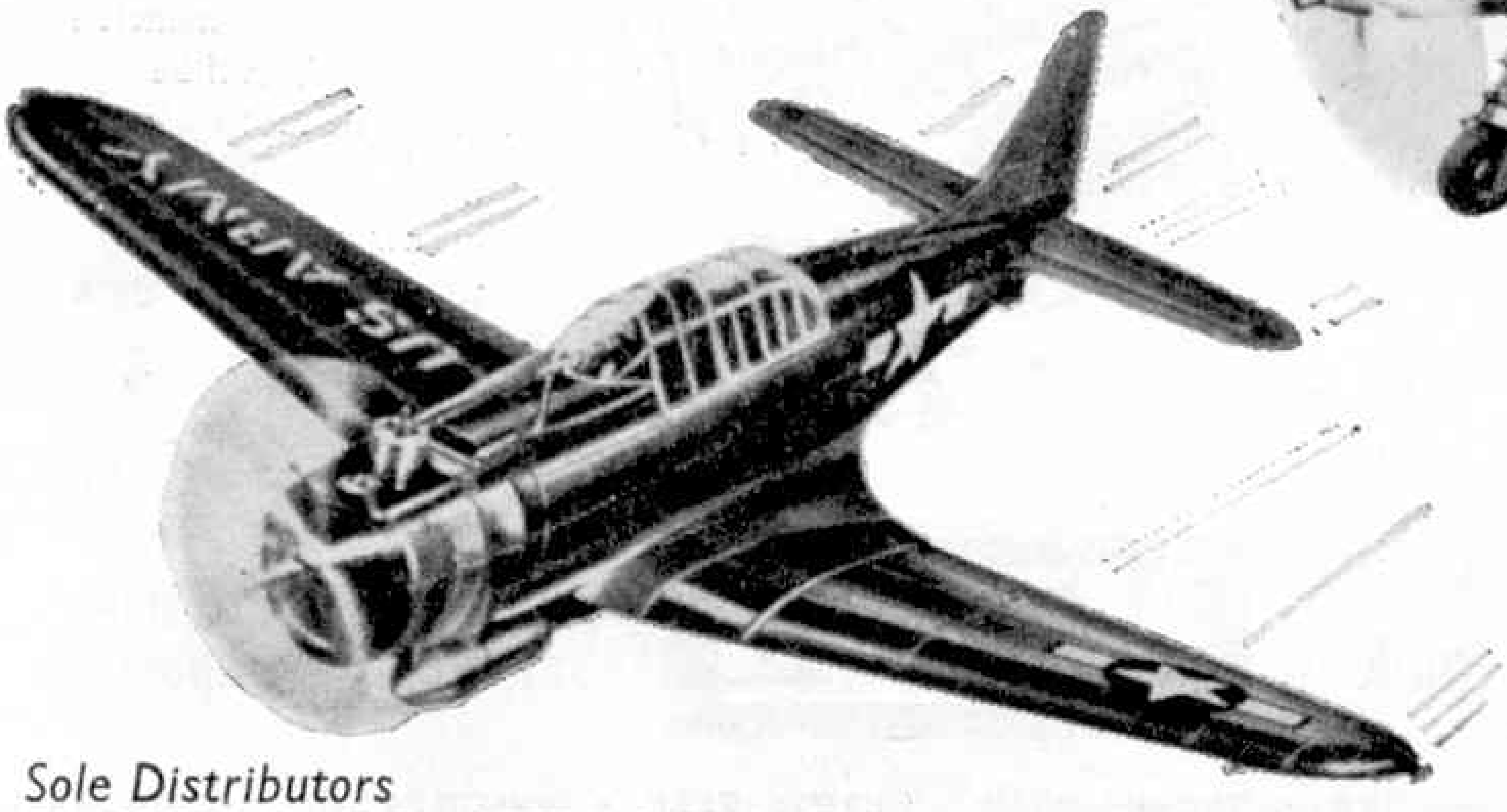

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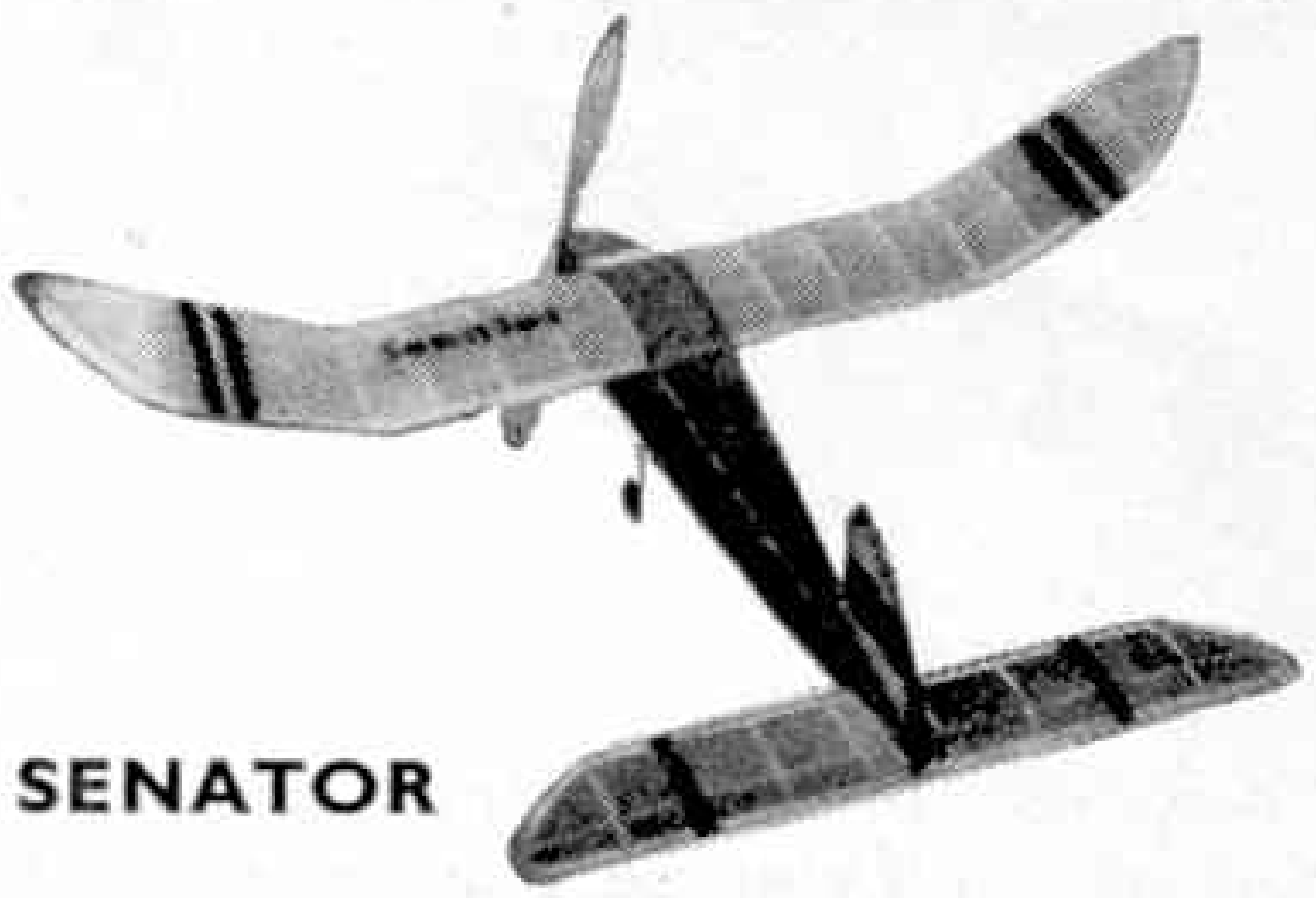

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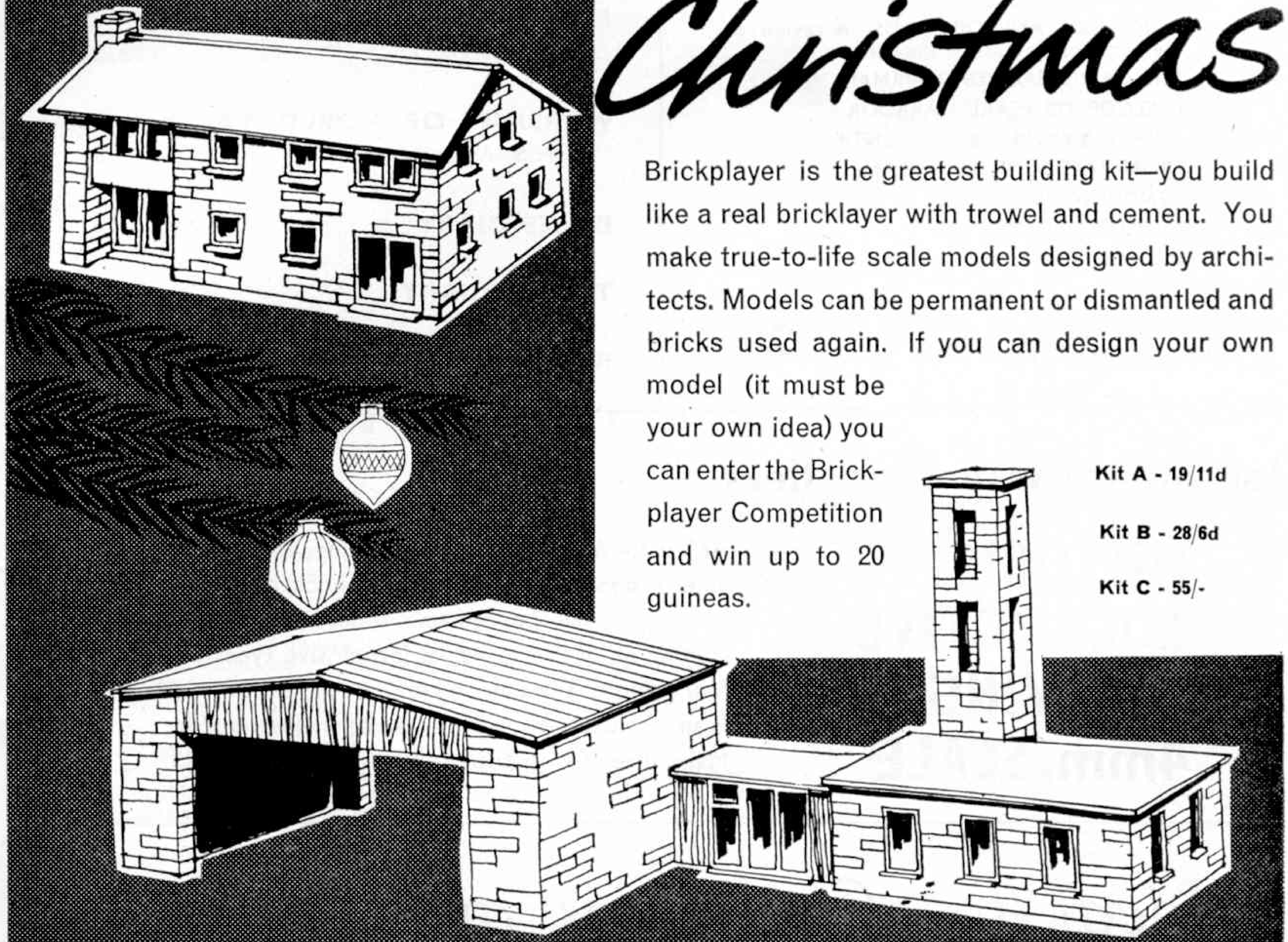

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IAN ALLAN

MECCANO MAGAZINE

Volume XLVIII **No. 12** **December 1963**

Greetings For Christmas

ONCE again, we come to the end of a busy year in the offices of the *Meccano Magazine*, and my first pleasant task this month is to send Christmas wishes from myself and the staff to our readers all over the world. I know we shall receive many warm wishes in return, for the Christmas mail always contains a profusion of cards from every quarter of the globe, and we deeply appreciate the spirit behind them. Talking of Christmas reminds me of the cold spell that began in this country during the Festive Season last year and which was with us so long that it certainly overstayed its welcome. But I am not quite sure, cold though it was over here, whether we were any worse off than people in other countries. For instance, our picture this month shows you what happened in Germany, and I am indebted to Mr. Hans F. Kutschbach, of Hanover, for this very appropriate illustration. Across the palatinate of the Rhine in West Germany the heavy squalls of snow last winter created havoc with the railway system. Our photograph shows a 4–6–2 which was almost entirely obliterated by the snow, at Neustadt, where soldiers had to be called out to help free it. We shall all hope for less severe conditions this winter, although there will be lots of young readers of the *M.M.* who will be disappointed if there is not sufficient snow for them to get in at least a little sledging!

One sport which can keep you warm in cold weather is that of ten-pin bowling, which is growing more and more popular over here. In this issue William Aitken tells us how ten-pin is a development of a game which was known long before the Pyramids were built. Since Mr. Aitken wrote this article I have had the chance to try ten-pin bowling for myself in one of the alleys recently opened on Merseyside, and I must say that, although I am far from expert at the game, I enjoy playing it.

Finally, I want to say a word this month to readers who may wonder why the annual index is missing from this month's issue. It is because the volume number for the current year is being continued for the first two months of next year and will, in fact, change in March 1964. Those readers who have their volumes bound each year should make a careful note of this. The February 1964 issue will contain the full index for the current volume.

THE EDITOR

Next Month: WHERE PIRATES STRODE

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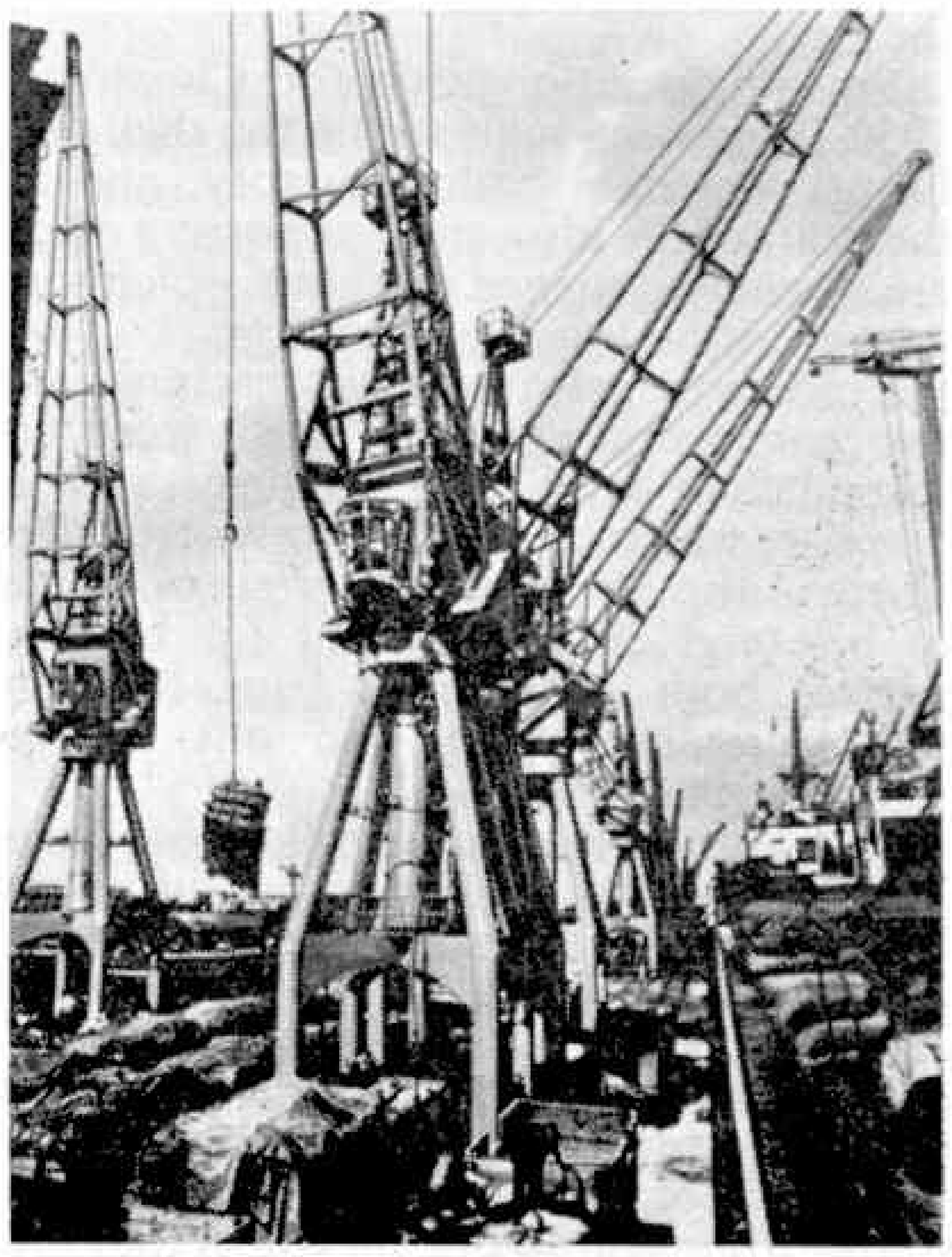
OUR FRONT COVER

This month's cover shows a number of modern DD.2 cargo-handling cranes designed and built by Stothert & Pitt Ltd. of Bath and installed at Avonmouth for the Port of Bristol Authority. These cranes are of all-welded tubular design and luffing is by means of a single, centrally-placed, hydraulic ram. The machinery house and driver's cabin are constructed mainly of translucent resin-bonded glass fibre and access is via a spiral staircase inside the pintle tube. Each of these cranes has a capacity of three tons at 80 feet radius.



CHRISTMAS PRESENTS BY POST

Colossal Task That Calls For 150,000 Extra Staff

THE biggest Christmas business of all will soon be going at full speed. It is the colossal job of getting Christmas mail to its destination on time—a task which involves handling more than 180 million parcels and packets between mid-December and the New Year!

To cope with this Christmas traffic this year, about 150,000 extra staff will be taken on. Recruitment began in the autumn, when applications started to flow in to local head postmasters. The Post Office employs students from every country in the Commonwealth to help in delivering Christmas mail.

By ARTHUR NETTLETON

"Casuals", as these seasonal postmen and women are called, have been known to use all sorts of aids when delivering parcels—including wheelbarrows, shopping baskets on wheels, and golf trolleys!

The Post Office also rents hundreds of buildings to cope with the rush. These include drill halls, chapels, schools, and various other types of premises.

Additional transport is hired, and in past years this has ranged from motor coaches and removal vans to minibuses and horsedrawn vehicles. Even ice-cream vans, horse boxes, tractors, fairground wagons and circus coaches have been pressed into service.

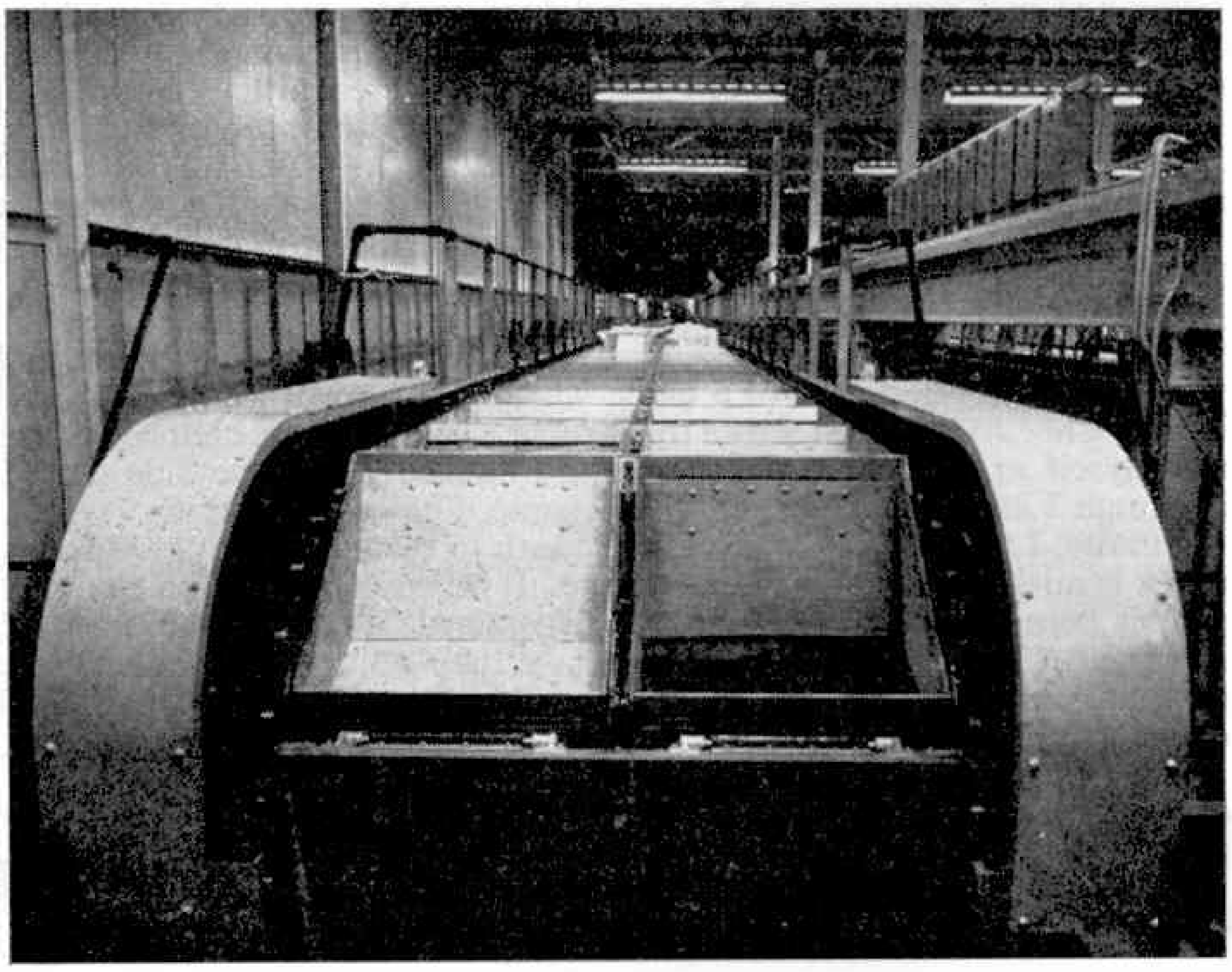
Although many more letters and cards than parcels go through the post at this season, the last-named are much more difficult to handle. They cannot be handled mechanically to the same extent as mail in envelopes, their shape and bulk militating against this. But the Post Office has had this problem in mind for some time, and Leeds possesses the most highly mechanised parcel sorting office in Europe to deal with the mountain of Christmas mail coming into and out of the city.

Put into operation just before Christmas, 1959, it has been built within the shell of a former wartime shadow factory, and at the heart of the ultra-modern sorting office are specially-designed machines which sort parcels at the touch of a button.

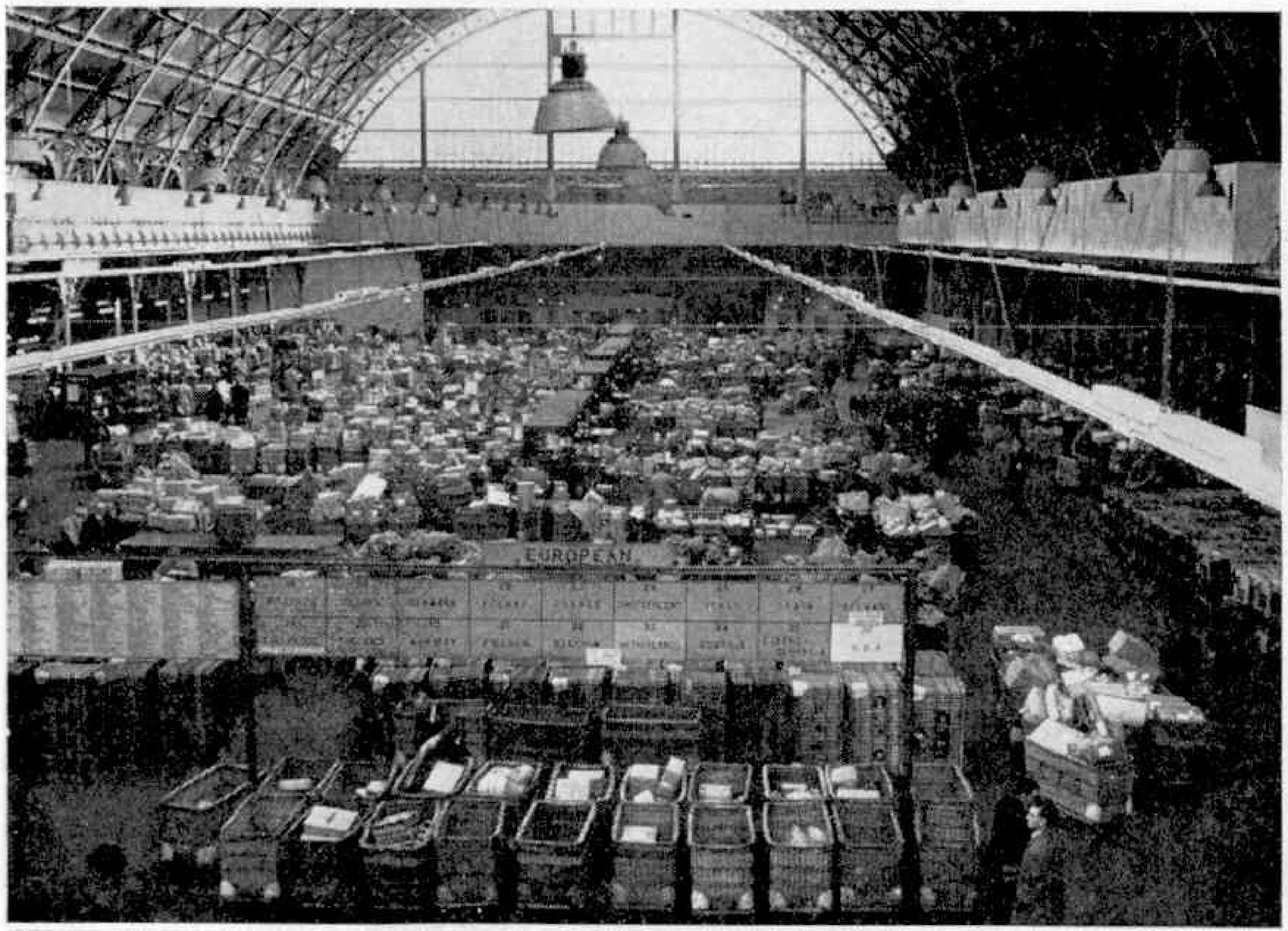
Feeding parcels into these machines are two conveyors which lift the parcels to second floor level. One of them is of a new type which can raise parcels vertically. There is also about threequarters of a mile of belt and chain conveyor for moving parcels, both loose and in bags, between the processing stages and out to the despatching points.

The installation can handle more than 10,000 parcels an hour, and provision has been made to add more machines which will increase the capacity to 14,000 parcels an hour.

This is how it works. Parcels reaching the office are emptied through hatches on to underfloor conveyors which carry them to the lifting conveyors, on which they are



Above: The Parcels section at Mount Pleasant. Temporary workers employed for the Christmas period are seen sorting incoming parcels on the conveyor. Right: Leeds Mechanised Sorting Office—the endless chain of bucket conveyors on the parcel-sorting machines.



The top illustration offers a general view of the interior of the Royal Agricultural Hall, London, showing Christmas parcels being sorted ready for despatch to destinations abroad.

Another view from the Leeds Mechanised Sorting Office. Parcels, already sorted by machine, are delivered by transverse conveyors and chutes to storage concentrators from which they are sorted into bags for despatch. All photographs by courtesy of H.M. Postmaster-General.

taken to the top floor. Here, they emerge on to special storage devices over the parcel-sorting machines.

The parcels are fed automatically from the storage devices to the individual sorters. Taking each parcel as it comes before him, the sorter slides it on to a trap door in front of him, reads the address, then presses one of a number of buttons on a keyboard according to the destination of the parcel.

The trap doors open, the parcel slides through, and the doors close again ready for the next parcel to be sorted. Below the trap-doors the parcel passes to a loader which, at just the right moment, allows it to slide into one of the buckets on an endless conveyor chain.

As each parcel goes into its bucket, the code keyed out by the sorter is transmitted to a central mechanical "memory" and stored there. Subsequently, when the bucket containing the parcel reaches the proper point, it discharges the parcel on to one of a series of belt conveyors running at right angles to the bucket chain.

The belt conveyor takes it to the point where it will be placed in a bag for despatch. When each bag is full, it is sealed and hung on a chain conveyor which takes it to the despatching platform, where it is automatically discharged at the appropriate van loading point.

The whole installation is powered by 88 electric motors totalling about 160 h.p. and includes 1,056 hoppers and about 3,600 feet of belt or chain conveyor.

Care has been taken in designing the equipment to minimise the risk of damage to the parcels. Apart from the normal precautions taken with conveyor machinery, there are rubber side-plates, photo-electric blockage detectors, and other safeguards. These shut down any section when damage to mail might occur.

The memory unit consists of a number of pin-wheels which revolve in synchronisation with the hopper train. Parcels going through the machine are recorded on these wheels by causing steel pins to project from the sides of a particular one. The pins cause the parcels to be released at the correct point.

This Christmas, another new system for handling parcels will be having its first major test. Introduced into East Anglia last June, it is designed to improve the reliability of the parcels services in the area and to reduce costs. Previously, parcels were moved from place to place in many small consignments. Consequently they were difficult to control and were often delayed. Now the Post Office is experimenting with arrangements whereby the mails are moved in bulk under closer control (partly by rail and partly by road) between relatively few main centres, with distribution and collection from these centres by road.

The area chosen for the experiment comprises Norfolk, Suffolk, Essex, and Cambridgeshire, together with parts of Hertfordshire and Middlesex. Concentration centres have been set up in London, Peterborough, Norwich, Ipswich, Chelmsford, Cambridge and Southend-on-Sea.

All parcels from post offices in East Anglia now go first to the appropriate "home" concentration centre by road, then, unless intended for another office in the same area, they are sent by trunk services to the concentration centre serving the destination office, if it is in East Anglia. Parcels for addresses outside East Anglia go out through London or Peterborough. Parcels coming into the region are also routed through one or the other of those places, and then go to the delivery office either direct or by way of one of the other concentration centres.

The scheme was begun to ensure that all parcels posted in East Anglia are delivered on the following day, except in one or two isolated rural areas where there is no second daily delivery.

To provide these new parcel services the Post Office is using about 90 new road vehicles. More than 30 of them are articulated vans, and mobile "boom" conveyors are used to load them. If this East Anglian experiment succeeds, especially during its severest test this Christmas, the Post Office aims to reorganise the parcel post similarly in other parts of the country.

At Christmas, millions of parcels are put into sacks, transferred to motor vans and trains, sorted at offices and finally delivered. Although the Post Office does its best to ensure that they arrive safely, you can help by following the advice which has accrued from many years' experience in handling such mail.

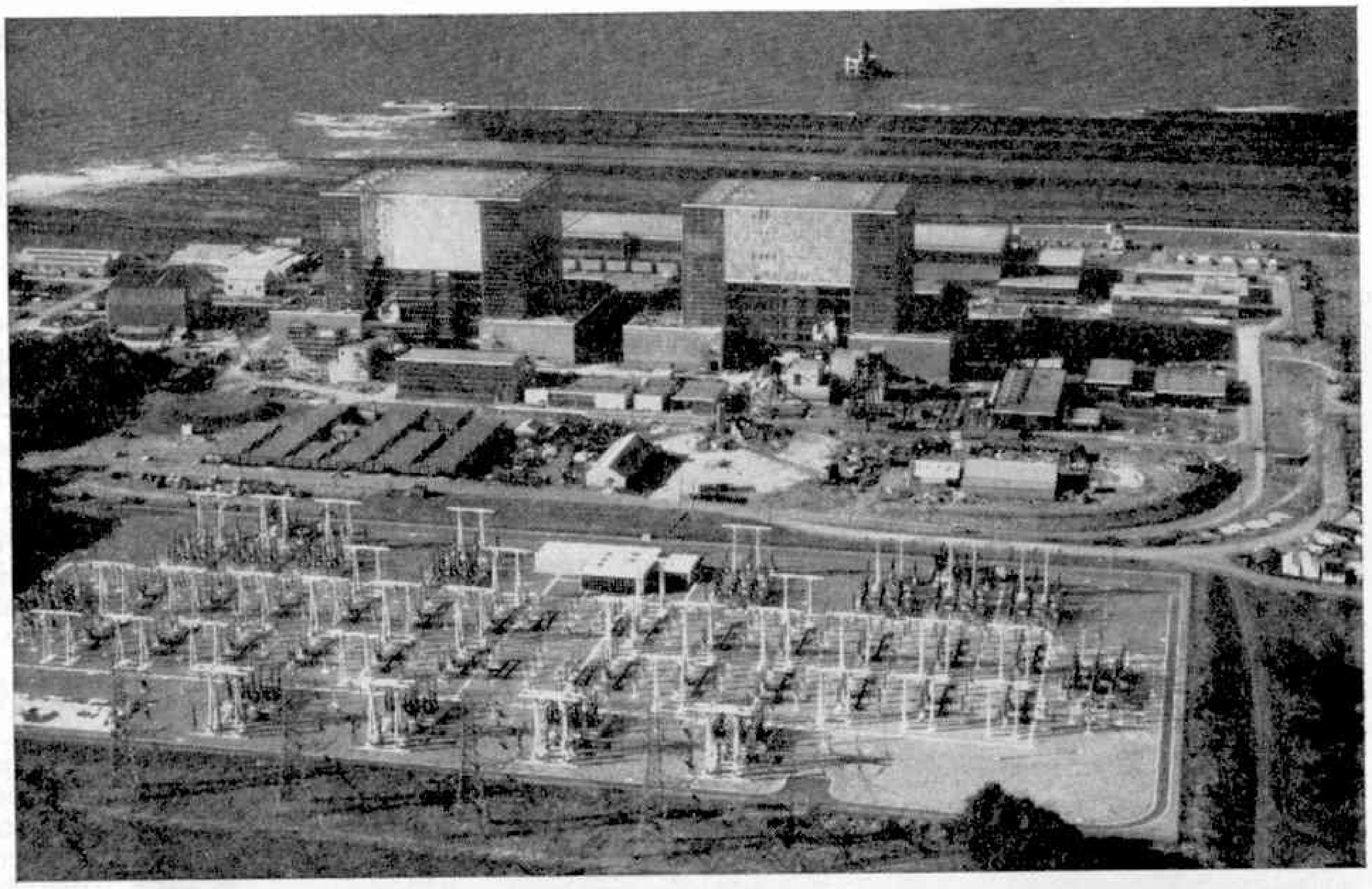
Remember, for instance, that many

(*Continued on page 533*)

MAKING A NUCLEAR POWER STATION

By

L. A. REDMAN



An aerial view of Hinkley Point Power Station.

THE plans and specifications of a nuclear power station weigh some two and a half tons and cost £250,000 to produce, while a completed nuclear power station can cost £55,000,000 or more. Interest and repayments on a sum like this amount to some £15,000 per day.

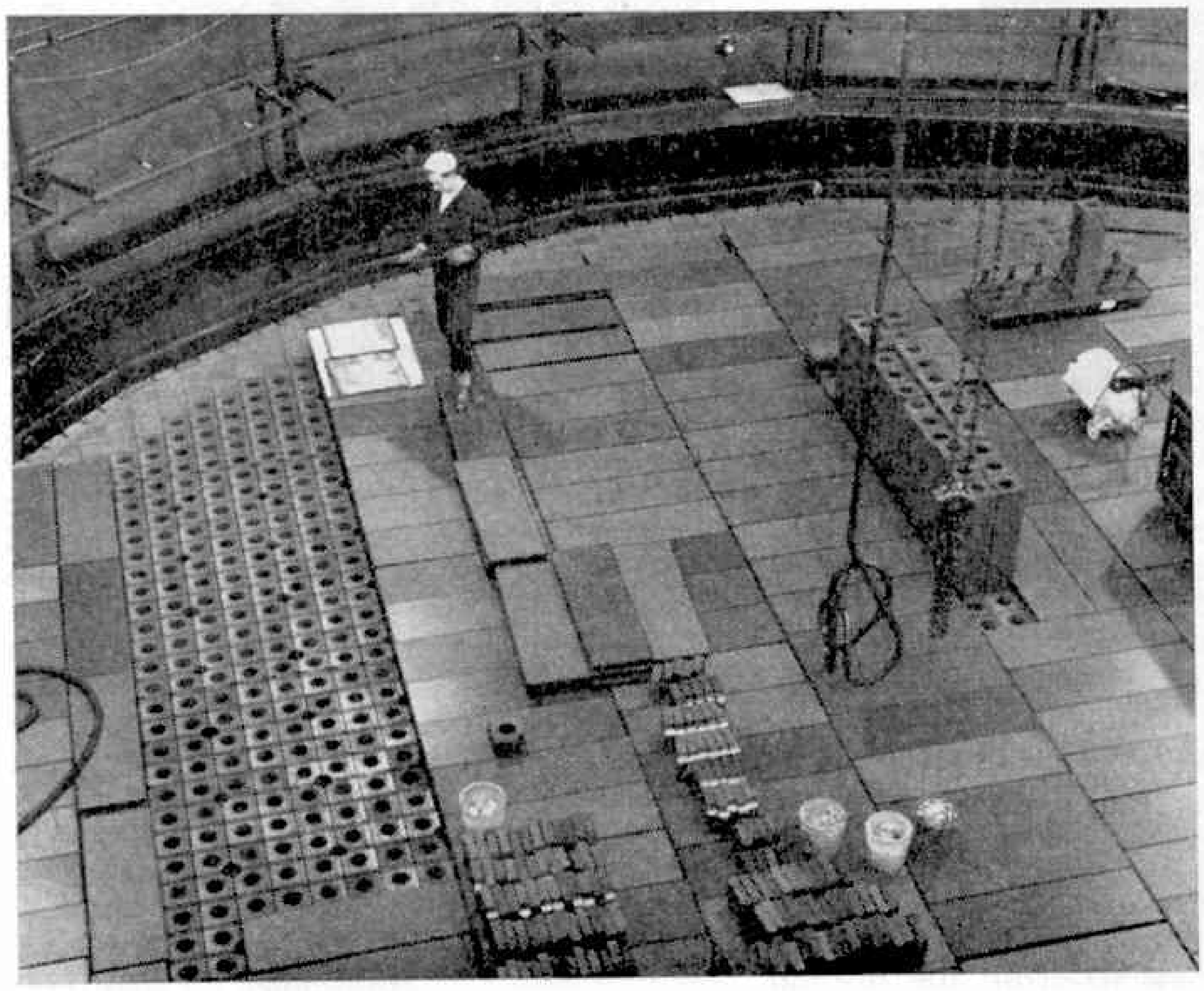
Obviously nuclear reactors must have some great advantages to justify this cost. Once built, a reactor will run for several years on a single filling of uranium fuel. In Britain, a steadily increasing amount of electricity is being produced by nuclear power stations. As the demand for power increases year by year this is very timely, for the country's resources of coal are not inexhaustible, and we have little water power.

Nuclear reactors are used to power ships like the Soviet icebreaker *Lenin* and the United States' passenger-cargo ship *Savannah*. In addition to these uses, reactors produce radioactive isotopes which are used on a large scale in industry and research. The use of radioactive isotopes saves British industry some £7,000,000 annually. In America, the figure is £200,000,000 and increasing every year.

The energy in a nuclear reactor is produced by the splitting of uranium atoms when they are hit by a tiny particle called a neutron. In addition to energy, more neutrons are produced, these hit other uranium atoms and split them so producing more energy and yet more neutrons. In turn these new neutrons split other uranium atoms and so the reaction spreads. A reaction which spreads from small beginnings in this way is called a chain reaction. The chain reaction can only proceed properly if there is more than a certain minimum amount of uranium present and if the neutrons are travelling at the correct speed.

When they are first produced the

Material for this article has been taken, with the kind permission of the Oxford University Press, from the author's book "NUCLEAR ENERGY". Illustrations are by courtesy of The English Electric, Babcock & Wilcox and Taylor Woodrow Atomic Power Group.



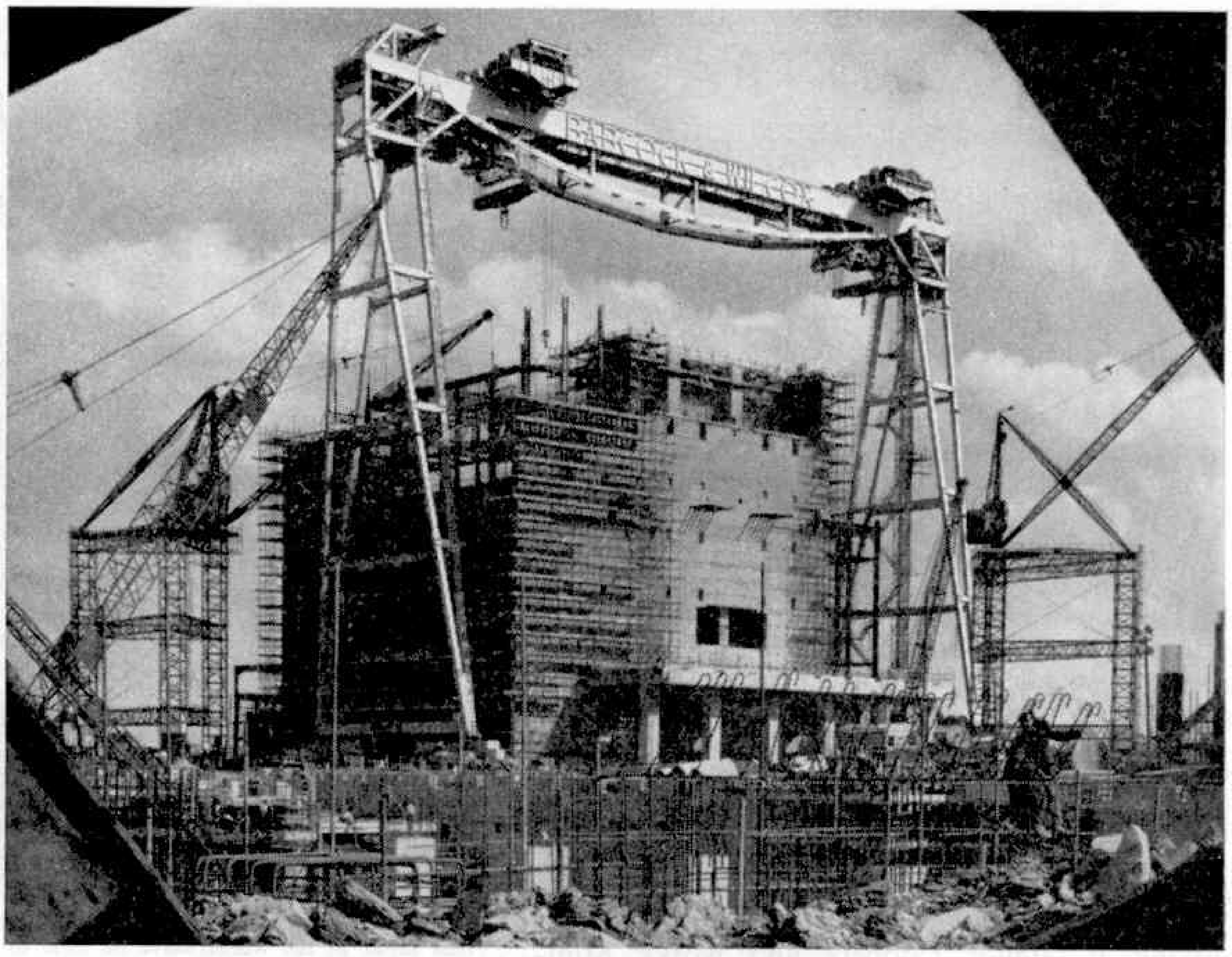
Erecting the graphite core in one of the two pressure vessels at Hinkley Point.

neutrons are travelling too fast. They are slowed down to the correct speed by letting them bounce off carbon atoms. In order to do this the uranium fuel is surrounded by graphite, a very pure form of carbon. Clearly if there was any substance which absorbed neutrons mixed with the carbon the chain reaction would soon stop and the reactor would not produce any energy.

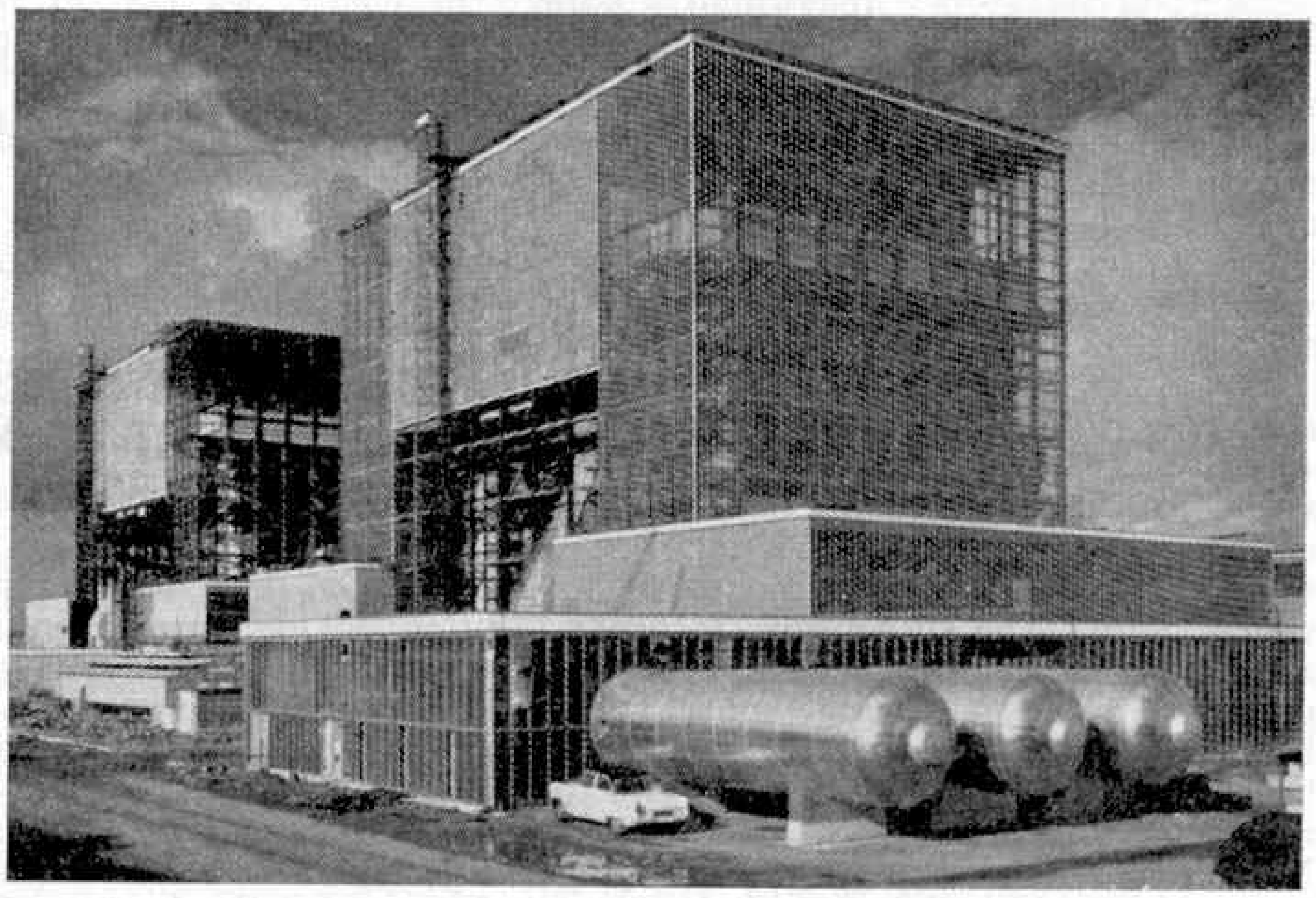
At the Hinkley Point power station in Somerset 2,500 tons of graphite are used. Even the slightest impurity in this huge quantity would absorb neutrons and seriously impair the efficiency of the reactor. This means that the 132,000 blocks of graphite used have to be kept scrupulously clean and must be laid with great accuracy. After machining to correct size (accurate to one thousandth of an inch) at the factory they are individually packed and numbered, arranged in correct sequence for laying and transported to the site in covered lorries. On the site the blocks are stored and then vacuum cleaned before being placed in position. The positioning of the blocks is of particular importance. The fuel channels through the graphite have to be exactly vertical, and other channels have to be accurately positioned to take the complicated equipment required to operate the reactor.

The chain reaction can be regulated by using control rods which absorb neutrons. Boron and cadmium are two elements which absorb neutrons. So that they can be made easily, the control rods are usually made of aluminium or steel which has the boron or cadmium mixed with it. When the rods are raised up out of the reactor the chain reaction proceeds quickly and a large amount of energy is produced. When the rods are lowered into the reactor they absorb the neutrons, the chain reaction is slowed down and so the amount of energy produced is reduced. The control rods are mounted vertically and are raised out of or lowered into the reactor by a flexible stainless steel cable operated by a motor. Between this motor and the drum carrying the cable there is an electromagnetic clutch. Any power failure releases this clutch and under their own weight the rods drop into the reactor and stop the reaction immediately before any serious damage can take place.

Now that we have seen how the energy is produced and controlled the next problem in the making of a nuclear reactor is to get the energy out of it so that it can be used. This is done quite simply by pumping a cooling fluid, either a liquid or a gas, through the spaces between the uranium fuel and the graphite. To prevent a chemical reaction between the uranium and the cooling fluid the uranium is enclosed in a metal can. As the coolant flows up in contact with the cans it absorbs the heat released by the splitting of the uranium atoms. The hot fluid then goes into a heat exchanger where its heat passes from the fluid to cold water, turning the latter into steam at high pressure. This steam is then used to drive the turbines of an ordinary electric power station.



No. 1 Reactor building under construction straddled by the world's largest Goliath crane capable of lifting 400 tons to a height of 200 feet.



A view of the two reactor buildings at Hinkley Point with the CO_2 storage tanks in the foreground.

At present, most power reactors use carbon dioxide gas as coolant because it is convenient, cheap and safe. However, at Dounreay in Scotland they have a fast reactor, the core of which is not much bigger than a dustbin. In addition to the small size of the core the amount of heat produced is so great that a gas cannot remove it quickly enough. A liquid metal coolant is the answer. The obvious choice would be mercury since it conducts heat so well, but unfortunately it absorbs neutrons strongly and so is not suitable. Liquid sodium absorbs few neutrons and conducts heat well, but it solidifies at 98 degrees C. so that when the reactor cooled down all the pipes would become blocked. This difficulty is overcome by using an alloy of 22 per cent. sodium with 78 per cent. potassium which remains liquid at ordinary temperatures.

It would, of course, be possible to use the hot fluid to operate the turbines of the power station directly, without the use of the heat exchangers. It would be possible, but extremely unwise. As the coolant passes through the reactor its atoms are bombarded by neutrons so that some of them are made radioactive. These radioactive atoms then send out dangerous radiation. Also, there is a possibility that the cans round the uranium fuel may leak, thus spreading radioactive waste products into the fluid. If the fluid went directly to the turbines this radioactivity would spread, and endanger workers in the

(*Continued on page 533*)

NEW COOPERS FOR BRUCE McLAREN

WHILE most of us will once again be facing the rigours of an English winter, Cooper's Number One driver, New Zealander Bruce McLaren will be visiting his parents and enjoying summer sunshine down under. It will not be purely a social visit for Bruce has quite a programme of racing, both in Australia and New Zealand. This time he is running his own team of Coopers, two cars that have been specially built to the specification of Bruce McLaren Motor Racing Limited.

Bruce will drive one himself; the other he is entrusting to Timmy Mayer, the 1962 Formula Junior Champion of U.S.A. Mayer has been driving F. Junior Coopers and works Mini-Coopers this season with some success. The McLaren Coopers differ in many respects from the Formula One works cars raced this year, one important difference being the engine, which will be a four-cylinder 2.5 litre Coventry Climax, very similar to the engines with which Coopers won the World Manufacturers' Championships in 1959 and 1960.

McLaren's chassis, although based on the current Formula One Cooper, is smaller and lighter, but uses semi-stressed skin construction to obtain extra torsional rigidity with the slimmest possible body, which measures only 25 inches at its widest point. The suspension, incorporating Cooper "anti-dive" principles, to prevent the nose dipping under fierce braking and maximum acceleration, has been further modified at the back end to include a top radius rod. The 2½-litre McLaren Coopers were given working up tests at Goodwood before being sent overseas.

In their 43 days' hustle round the world in a Ford Corsair, Eric Jackson and Ken Chambers (the latter at the wheel) have no time to admire the wonders of the Sydney Harbour Bridge.

By JERRY AMES

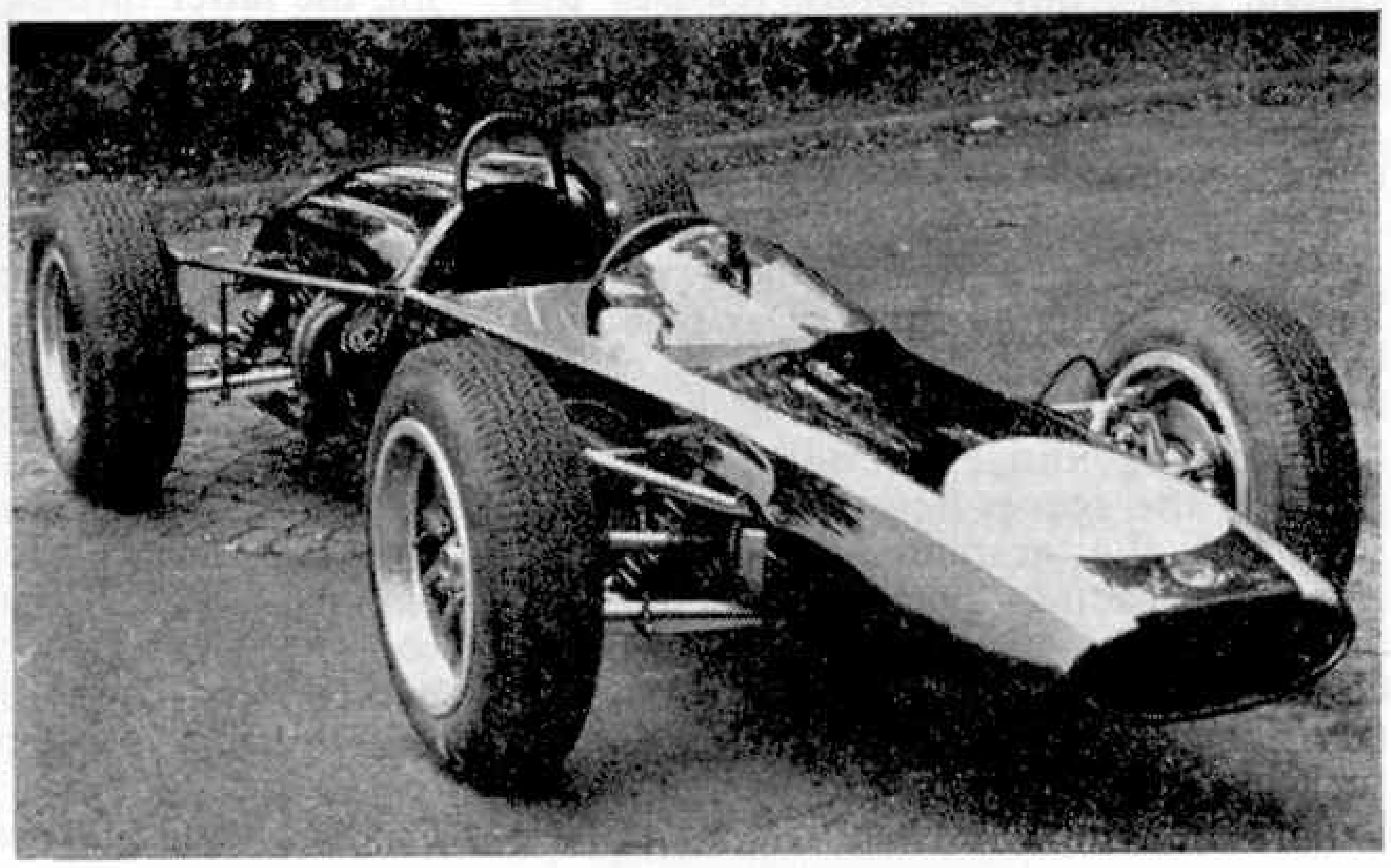
Jules Verne's heroes did it in eighty days, but one of the new Ford Corsairs has gone round the world in 43 days 5 hours. Its intrepid drivers, Ken Chambers and Eric Jackson, both rally driving garage proprietors, left London for New York on September 2 and arrived back on the eve of the Earl's Court Motor Show after packing more adventure into 40 days than most motorists find in ten years.

They drove from New York to San Francisco, thence to Honolulu, westward across Australia from Sydney to Freemantle, on to Ceylon, Pakistan and across the border to Iran through provinces famous for the beauty of their carpets. Then on into Turkey over the appalling roads of Greece, Yugoslavia through Switzerland, France and so to London where they were fêted, on arrival, at Ford's showrooms in Regent Street.

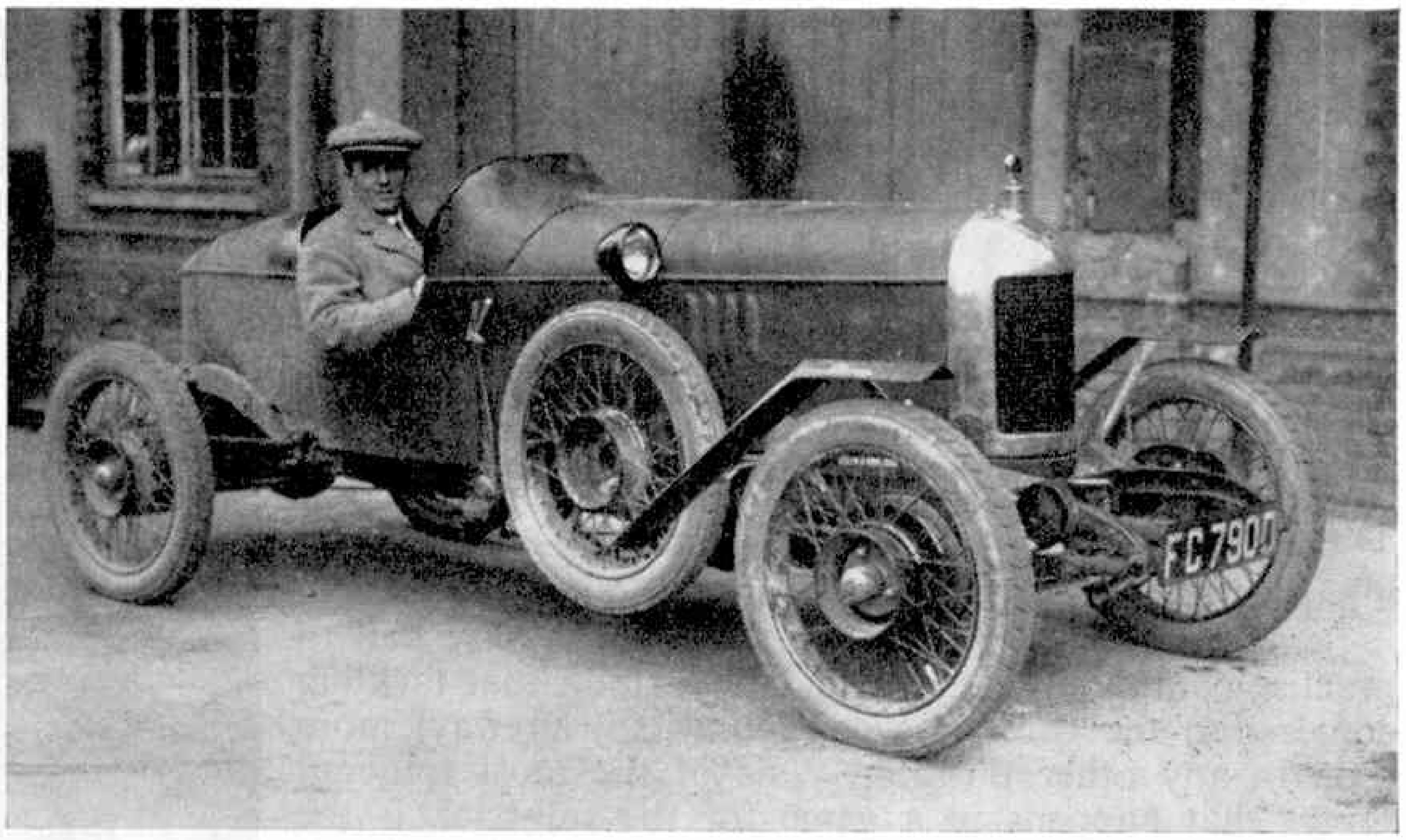
They covered a total of 29,991 miles and passed through thirteen countries before journey's end. Among the wild animals they encountered was an angry water buffalo, which gave chase, while they risked a brush with local bandits near Quetta—a memorable trip that proved the new Ford Corsair to be quite a motor car.

* * * *

I saw and had a chat with Stirling Moss the other day. Without that beard he looks once more like Stirling Moss. He told me quite definitely he will not be



One of the outstanding cars of 1963 was the Triumph 2000 pictured below, left. On the right is Bruce McLaren's new 2½-litre Cooper with modified semi-stressed section chassis ready for despatch to Australia and New Zealand.



The very first M.G. with its creator, Cecil Kimber, at the wheel. This car is still owned by B.M.C. and is in good running order.

managing the Japanese Honda team next year, but is blossoming forth as an entrant and has ordered a new Formula One machine. He refuses to disclose the make just yet, but says he will wait until he has found and signed up his driver. The occasion was the introduction of the Stirling Moss Dream Car, based on a Ford Cortina GT, but with rear portion of the body completely re-styled by David Ogle. It is expected to have a top speed of around 100 m.p.h. and be able to cruise at 90 m.p.h.

In true Stirling Moss fashion it is full of gadgets and some very good ideas, from electrically heated rear screen, plus large single wiper, to built-in multi-purpose tape recorder and Vibrosonic radio.

Harold Radford, who carried out the work in his West London coachworks, is going into limited production with this model at a price of £1,390, although at this figure it will not include all extras such as sliding roof, tape recorder and electrically-operated windows.

* * * *

Fords are gradually extending their interests in competition motoring on both sides of the Atlantic, in addition to supplying engines for the AC Cobra, which is to be available to British drivers for the first time. Fords intend sponsoring the fascinating Lola GT, also powered by their big V–8 engine. A team of these cars is being built for races in the New Year. In charge of the project is John Wyer, formerly responsible for the competition side of Aston Martin. He has now been appointed Competition Manager of Ford, U.S.A., but will be based in England to look after Ford's European racing activities.

John Wyer told me his first major operation will be to build up the Ford–Lola GT team. Fords have ambitions of stealing the Le Mans thunder from Ferrari. They have a car that should be capable of doing this and with the experienced John Wyer in charge their chances of success look extremely promising.

Fords and Rootes are expected to join forces in the production of a high-speed version of the Sunbeam Alpine, powered by the big 4.2 litre Ford V–8 engine. Under trials it is said to have been very happily exceeding 125 m.p.h. with loads of power to spare at all speeds. This new model is at first mainly intended for the U.S. market, but later models will be available for British motorists.

Next year, at Le Mans, gas turbine cars will be officially permitted to compete against other vehicles in the various classes. I have it on good authority that Sir Alfred Owen and Rover will again be taking part, perhaps with more than one car. This time the Rover–B.R.M. is likely to be equipped with a new type heat exchanger.

Grand Prix drivers have been giving a great deal of thought to the subject of new Formula One regulations, due to be introduced in 1966. At a meeting of the Grand Prix Drivers' Association it was decided to recommend for consideration by the C.S.I. an engine limit of 3 litres, plus a minimum weight of 525 kg., which in British terms comes out at 10.3 cwt. Well, now, if we are to have bigger engines, of which I am strongly in favour, I should like to see them as modified units of production engines, permitting, of course, twin overhead camshafts. Such modifications could benefit ordinary road cars and bring Grand Prix machines more into line with normal type vehicles, without hampering development for high efficiency power.

* * * *

Fastest man on earth, Craig Breedlove, a quiet, unassuming young man with a soft Californian accent, paid a flying visit to London recently. He told me his three-wheeler was finally constructed in the garage of his father's house near Los Angeles, and to get it on the road they had to knock a wall down. Craig Breedlove has ambitions to take John Cobb's record officially and for this he will need a four-wheeler. He has such a car already at the drawing board stage and plans to take it to Utah sometime in 1965. His new car will be powered by two V–8 Chrysler engines and for this purpose he is designing a very streamlined low drag body and reckons the complete vehicle should allow him a mean average of 425 m.p.h.

Know Your Cars—M.G.

The earliest M.G. had a very humble origin. It was Cecil Kimber, General Manager of Morris Garages, who in the early 1920s had the idea of converting a family tourer into a sporting carriage to sell at a moderate price. Encouraged and abetted by the late Lord Nuffield, the project succeeded from the very first announcement and the M.G.'s soon became famous throughout the world. As a compliment to Lord Nuffield, Kimber's cars took the initials of the garage that sponsored them.

Kimber's recipe was a simple one. In 1923 he took a 14.9 Morris Oxford with Hotchkiss engine, did some mild tuning, fitted a lightweight two-seater body and produced a car that could achieve 80 m.p.h. Cecil Kimber drove it in the 1925 Lands End Reliability Trial and gained a Gold Medal, shortly afterwards going into production with a bull-nosed, four-seater model; its smart, lightweight body being available in aluminium and blue, or red. Top speed was 72 m.p.h.

When Morris changed to deep radiators in 1927, so did M.G. Later, this car was superseded by the more ambitious 18/80 powered by a 2½ litre six cylinder Morris engine. The fastest version was the four-seater Tigress with outside exhausts which, when stripped for racing, could achieve a genuine 100 m.p.h. The cars ran in the Double Twelve Sports Car Race at Brooklands in 1929 and 1930.

The Midget, most famous M.G. of all, first appeared in 1929 with single o.h.v. camshaft engine, being a development of the Morris Minor. For the 1930 Double Twelve, no fewer than eight teams of these small cars were entered. Needless to say they took the team prize, one M.G. Midget averaging 60.23 m.p.h. for the 24 hours. Then came the Montlhery Midget and it was with one of these cars that Captain George Eyston became the first to break 100 m.p.h. in a 750 c.c. machine. There followed the **J**, **P**, and **Q** series, some being designed for road work, others with racing in mind.

One of the most delightful of all M.G.'s was the two-seater K.3 supercharged Magnette, with small, six-cylinder 1,087 c.c. engine. In standard form it had a top speed of 112 m.p.h.—a most fascinating machine to drive and one that could pretty well out-perform anything else on the road. Its first competition appearance was in the 1933 Mille Miglia, at the suggestion

(*Continued on page 534*)

SOCCER SKILLS

LESSON No. 2 — TACKLING

MANY people do not consider that tackling is a skill in the game, but to me as a full-back it is as much a part of the job as trapping or dribbling is to a forward.

Being a full-back it is one of the things I have had to practise continually as it is in this position that tackling comes into the game (I would think so, anyway) more than in any other position. One of the most frequent things that happens in a game for the full-back is the advance towards the opposing wing forward, who is heading towards him with the ball under full control. It is then the back's job to try to dispossess him.

But it is not only the backs who do the tackling. The half-back line are tackling quite often in a game, and it is my own belief that any forward who has the chance to get a full-blooded tackle should do so, even if it only means that he is taking pressure off the defence by doing it.

By *JIMMY ARMFIELD,*

England International Full-Back

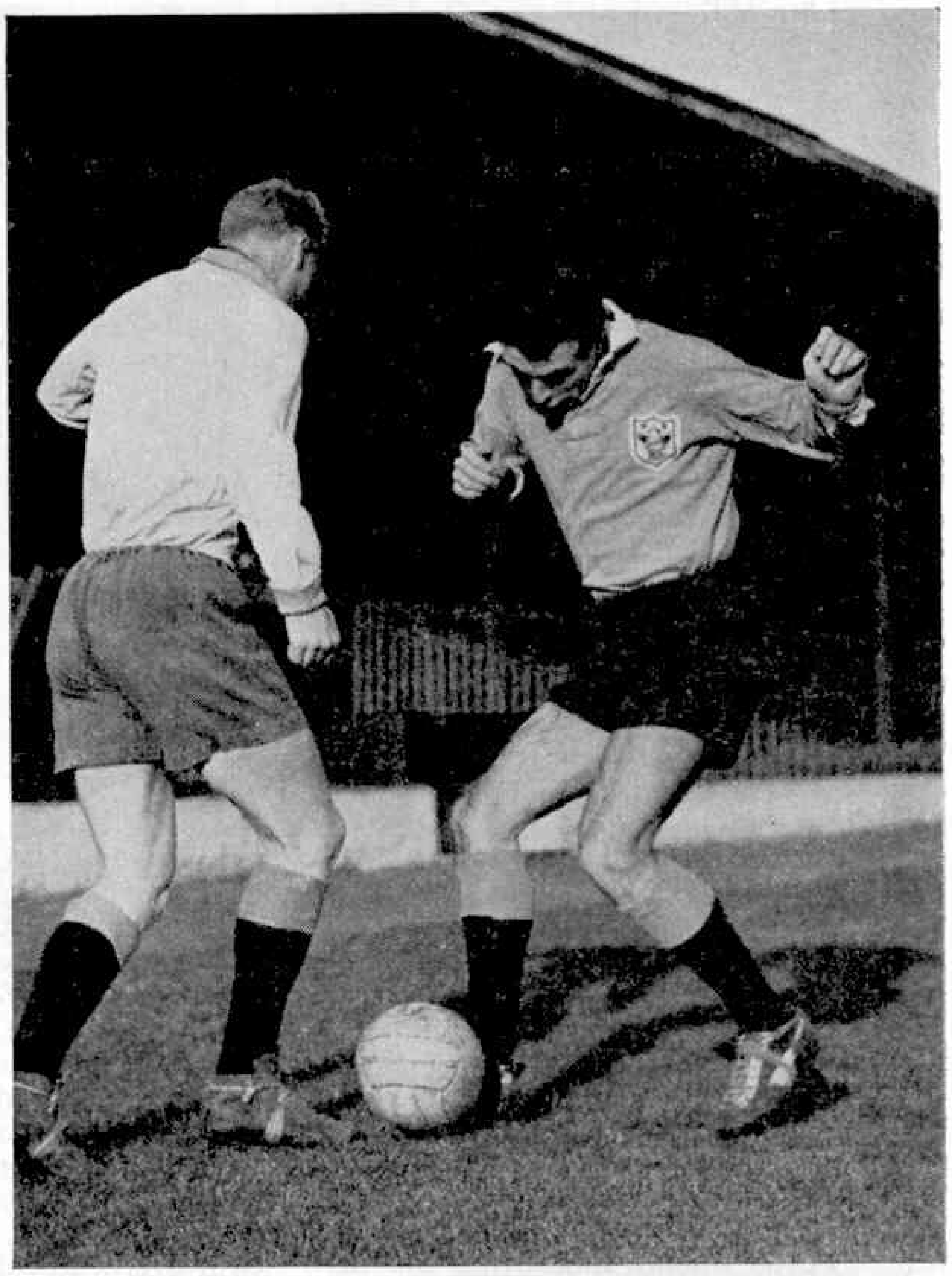
To me the art of tackling demands two or three things. They are strength plus quite a bit of courage, and determination. By the last-named I mean that the player who is doing the tackling should say to himself, "That is my ball and I am going to get it".

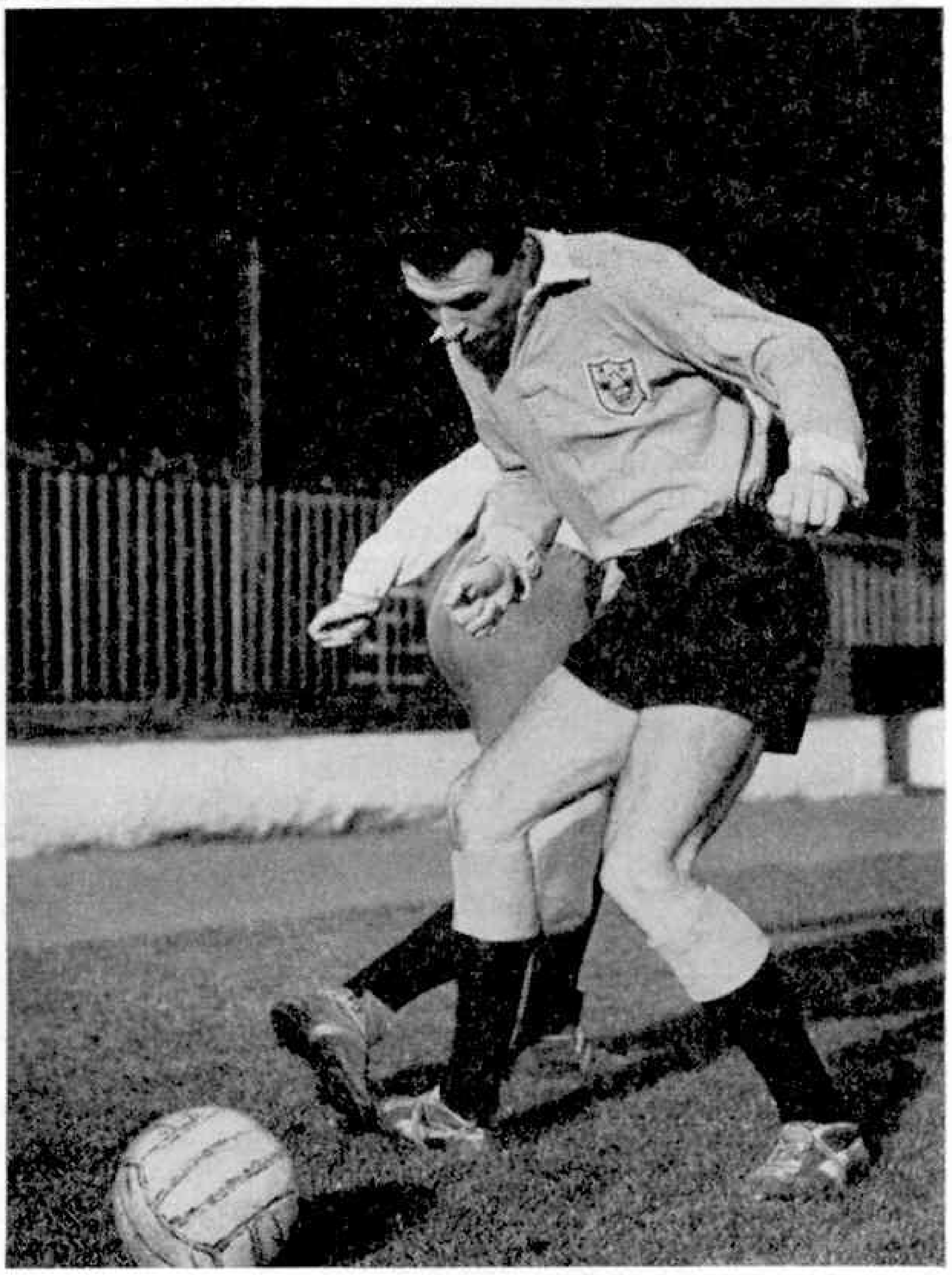
If you study Picture 1 you will see the player in the white shirt is about to be tackled. At this moment, both players have a 50–50 chance of getting the ball.

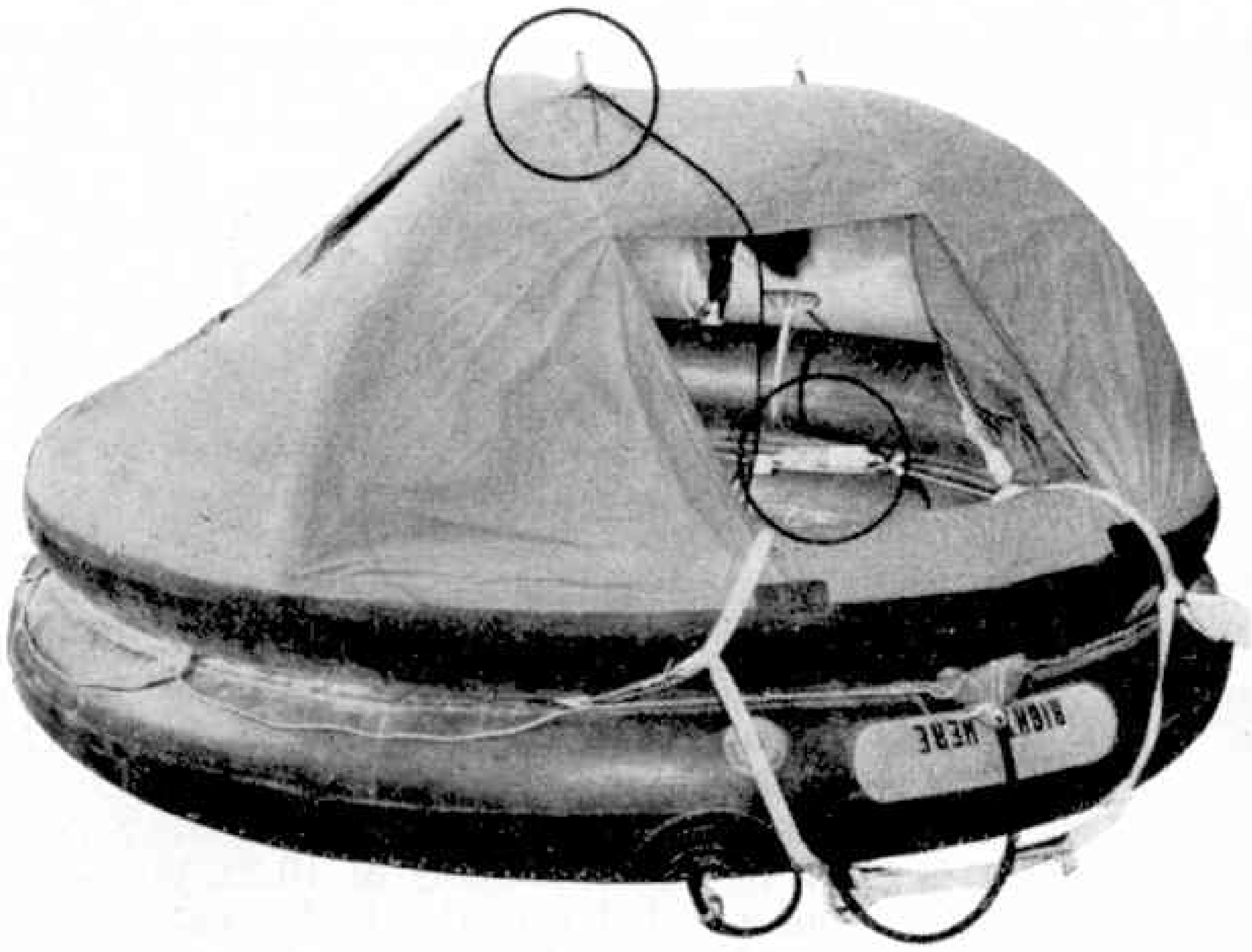
The player facing us, however, looks more determined and has, in fact, actually put his foot in position so that he can face up to any tackle from his opponent. What is more, he has set his body ready to check any form of body contact and in the picture you can see how firmly he is standing his ground. From this picture, too, you will observe that he actually gets the ball and that his opponent is left with no chance of recovery. This is what we call the block tackle, and my advice to you is use it whenever possible because not only is it the strongest tackle, but it also leaves you standing up and ready to carry on with the ball.

Of course, sometimes we cannot do this. As a result we have to use what has been commonly described as the sliding tackle. This generally happens when the defender is running backwards towards his own goal, chasing or running alongside a forward who is in possession, or is going to get possession of the ball. The only alternative then is the slide tackle. Here the defender reaches out with the foot and tries to slide the ball away from his opponent before he can get to it. If possible it is better to get the ball out of play when you use this method as it then gives you time to get up and recover your position. One thing I must advise you on here is that I never use this method unless I am 99 per cent. sure of getting the ball.

I hope you remember these points. Never forget the determination —it is so important.







FLACON—A NEW MINIATURE RESCUE BEACON

This article appears by courtesy of the Editor of "A.E.I. Engineering".

THE saving of life often depends on how quickly attention can be drawn to those in distress, and it is the job of a rescue beacon both to alert and to direct rescue parties.

Ideally, the signal from a distress beacon should be capable of attracting attention at great distances, and it should be easy to home on, preferably without any need for special equipment in the search unit. The beacon itself should be weatherproof, small enough to form an integral part of a dinghy, and robust enough to withstand severe operating conditions.

A new miniature rescue beacon FLACON (Flashing Electric Beacon) produced by Associated Electrical Industries Limited is claimed to come the nearest yet to meeting these requirements. It is a battery-powered, transistorised device operating a discharge tube which automatically and continually generates intense flashes of light visible to the naked eye ten miles away. It therefore has a range exceeding that of many portable high-frequency radio beacons, which of course require appropriate receivers in the search units. In certain conditions distress rockets have a slightly greater range of visibility, but since only a limited number of them can be carried they may be exhausted before help is near. Further, rockets are not easy to set off from a dinghy in rough seas, especially if the occupants are injured.

In developing FLACON, extensive land and sea trials were carried out by A.E.I. Telecommunications Division, and their findings were confirmed by Air Ministry and Naval trials. The aim was to determine the maximum brightness and frequency of the light flashes, consistent with economy in power and weight. Approximately ten seconds between flashes of 700 lumen/sec. was found to be the optimum rate capable of easily attracting the attention at night of the occupants of a searching aircraft some ten miles away—the range laid down by Service requirements for pattern searching. To facilitate homing on the beacon, a faster flash rate of once every three seconds was desirable. At the reduced brilliance of 130 lumen/sec. this faster rate of flashing was visible from the air five miles away. No advantage was found in using flashes of coloured light, and lens systems were considered to be too bulky.

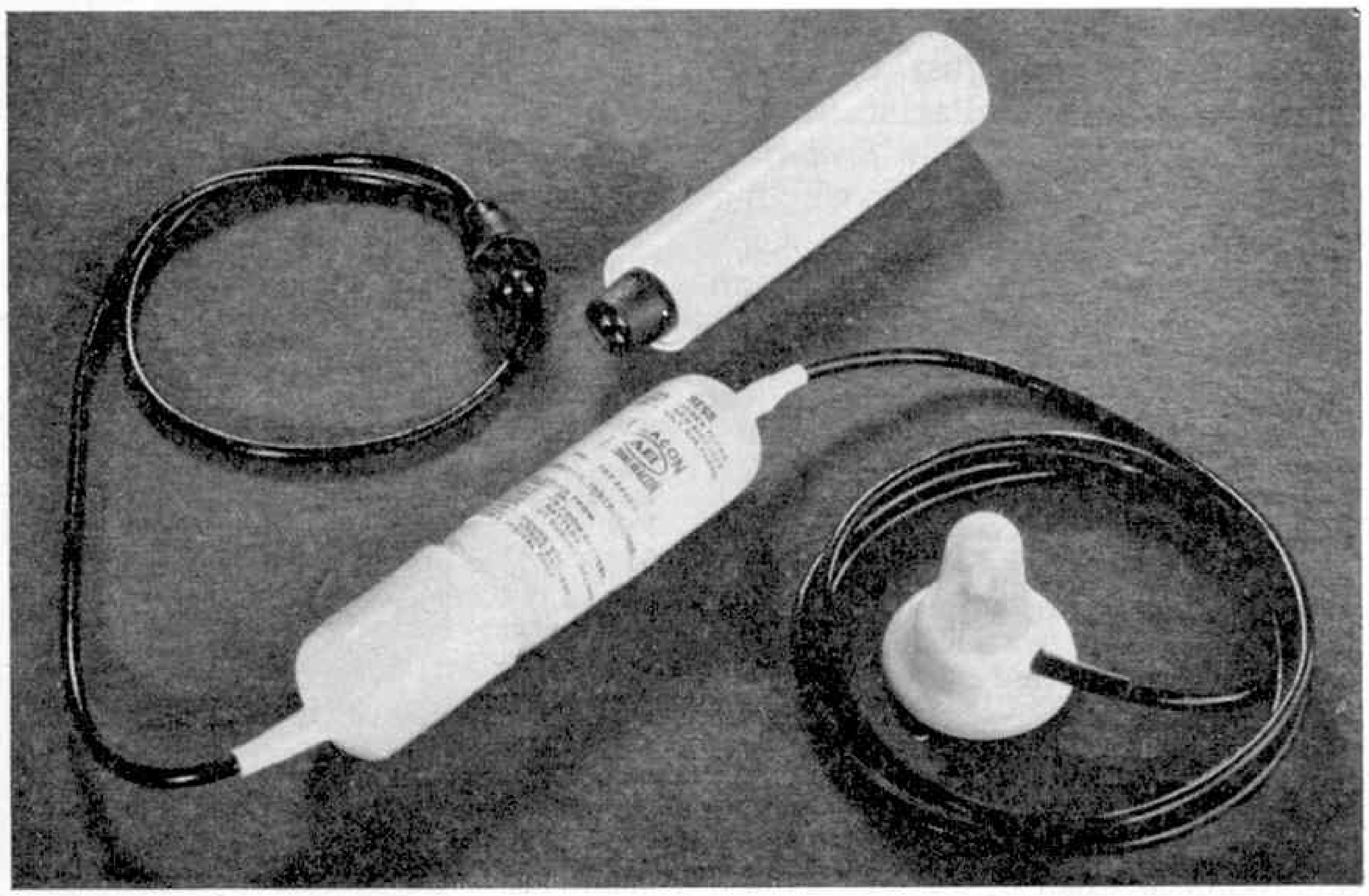
Top picture: FLACON installed in an inflatable dinghy, with the lamp-housing mounted at the highest point. The lamp-housing and generator are indicated by the circles.

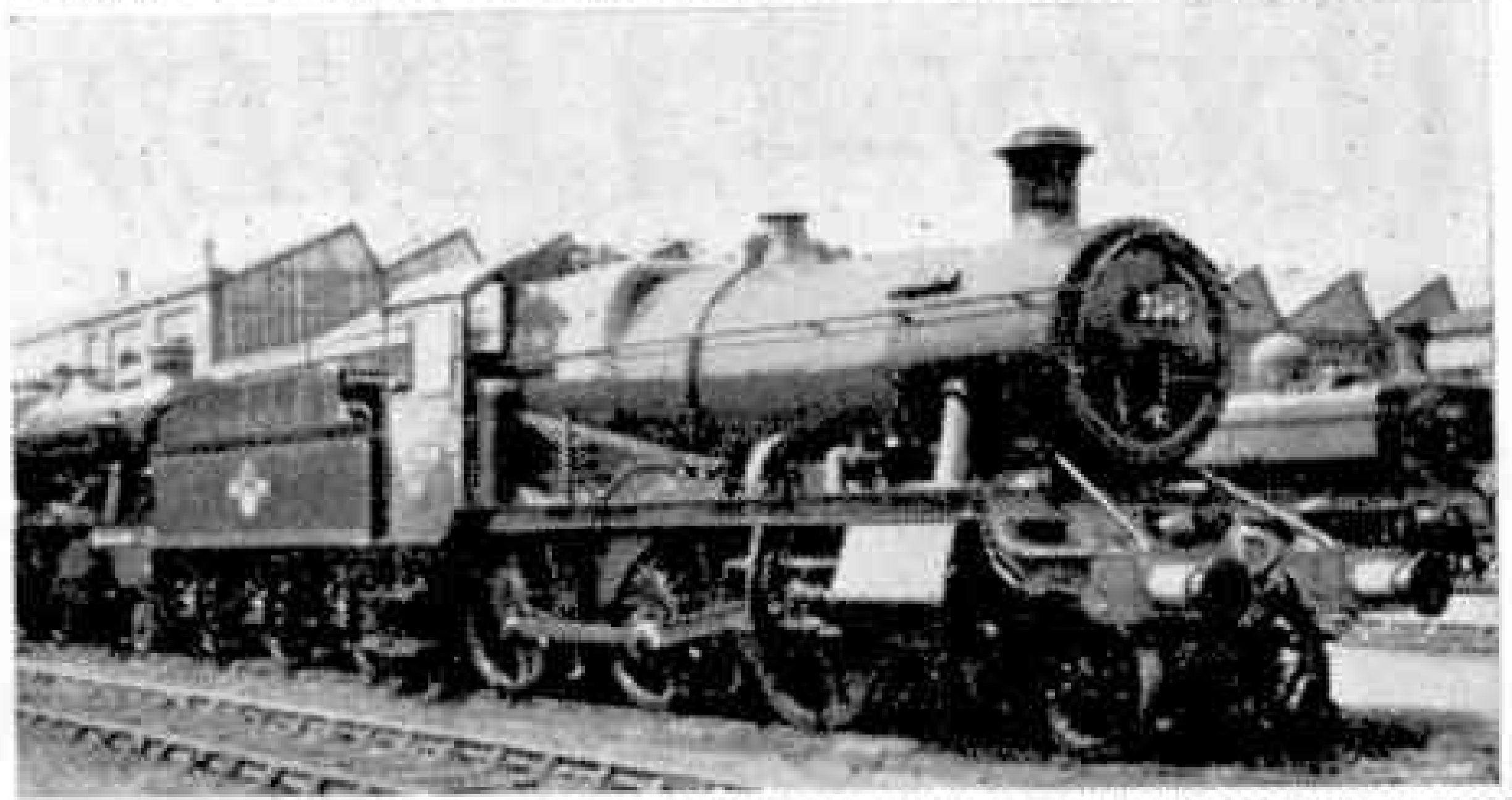
Use was made of a special hard-electrode discharge tube developed by the A.E.I. Lamp and Lighting Company, and one of the many technical problems which had to be solved in developing FLACON was the difficulty of firing such a tube in conditions of complete darkness. To overcome this, the trigger circuit (in common with all the other circuits) was required to achieve high efficiency and yet be small in size and weight.

FLACON consists of three plastic-encased units—a lamp-housing, a generator and a battery, and these are shown in the lower illustration on this page. The lamp housing has a maximum diameter of 7.6 cm. and is 7.5 cm. high, and contains the xenon-filled U-tube developed by the A.E.I. Lamp and Lighting Company. This unit emits light almost uniformly in all directions, The generator, which is cylindrical in shape to save space, is encased in P.V.C. and is permanently connected to the lamp-housing. It is 20 cm. long by 5 cm. in diameter.

To produce the high-voltage pulse needed to operate the xenon tube the generator comprises transistorised multivibrator circuits together with a transformer and a charging circuit. The standard battery is a 6V mercury cell 17.5 cm. long by 4.5 cm. diameter, and will operate continually at the nominal ten-second flash rate for 10–12 (*Cont. on page 533*)

Below: The three units of FLACON. The generator is permanently connected to the lamp-housing, and the battery is connected to the generator when required by means of the waterproof plug and socket shown.





RAILWAY NOTES

Contributed by R. A. H. Weight

A STRONGHOLD OF STEAM

As many readers will be aware, steam traction still reigns almost supreme on the main lines between London–Basingstoke–Southampton–Bournemouth–Salisbury and beyond. In a period of about eight hours, most of the time at Basingstoke, on a busy Saturday I saw no fewer than 43 different Bulleid Pacifics and nine B.R. Standard 4–6–0s, as well as W.R. 4–6–0 Hall and Grange class engines to and from the Reading line, together with a small variety of 2–6–0s. Such a galaxy of steam locomotives in express and other passenger service is probably unique in the world today. There were also eleven Type 3 diesels sharing in similar duties on the Waterloo–Bournemouth route.

On two consecutive days I left Waterloo in named trains which respectively have the fastest schedules of their kind. One was the *Bournemouth Belle*, accelerated to a two-hour timing down to Bournemouth, 108 miles, with a stop at Southampton. It consisted of ten Pullman cars weighing, say, 410 tons, just about the limit load for a Merchant Navy 4–6–2 as rostered. As several of those "heavyweights" were under repair just then, the engine was a Light Pacific, rebuilt West Country No. 34046 *Braunton*. There was some doubt as to whether we should keep time, but a keen Bournemouth driver and fireman made a splendid effort.

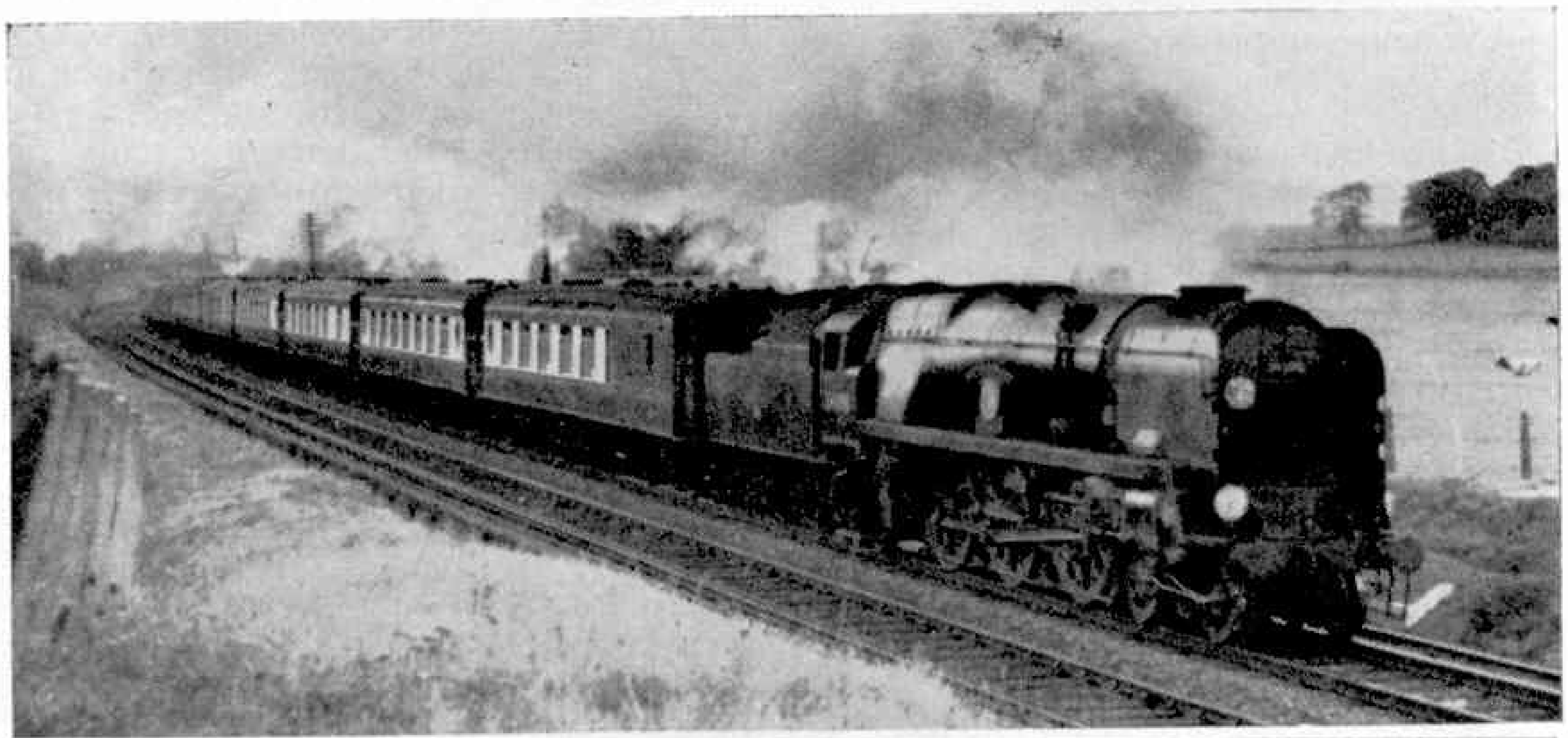
From the London suburbs at Wimbledon to the summit of the long, gradual rise past Basingstoke and Worting Junction, where the Bournemouth and West of England trunk lines part company, 66 m.p.h. was averaged along 45 miles. Eastleigh, 73½ miles from the start, was passed before time in 71½ minutes. Downhill speeds were up to 81–82 m.p.h. It was a most comfortable and enjoyable journey in very fine weather.

Bournemouth Central was reached barely a minute late, by 2.31 p.m. This was in spite of slowings for track repair work soon after leaving Waterloo, and near Beaulieu Road in the New Forest, then for signals approaching Southampton. The stop there was rather prolonged.

Next day, I travelled up from Southampton in *The Royal Wessex*, a full 12-coach train behind No. 35008, *Orient Line*. There was a five-minute late arrival at Waterloo, actually at 10.55, but without a rush I was able to be seated comfortably in the down *Atlantic Coast Express* as the departure whistle blew at 11.0.

This train, which I rode to Salisbury, weighed some 30 tons more than the *Bournemouth Belle*, with "12-on" of modern corridor rolling stock, bound for Exeter, Ilfracombe, Padstow and other destinations. It was headed by the pioneer Merchant Navy 4–6–2 No. 35001, *Channel Packet*. The relaying slack

Below is the "Bournemouth Belle" headed by 4–6–2 No. 34090 "Sir Eustace Missenden, Southern Railway". This photograph by S. C. Nash records a Sunday diversion of the train from its usual route, to travel via Guildford and Fareham.

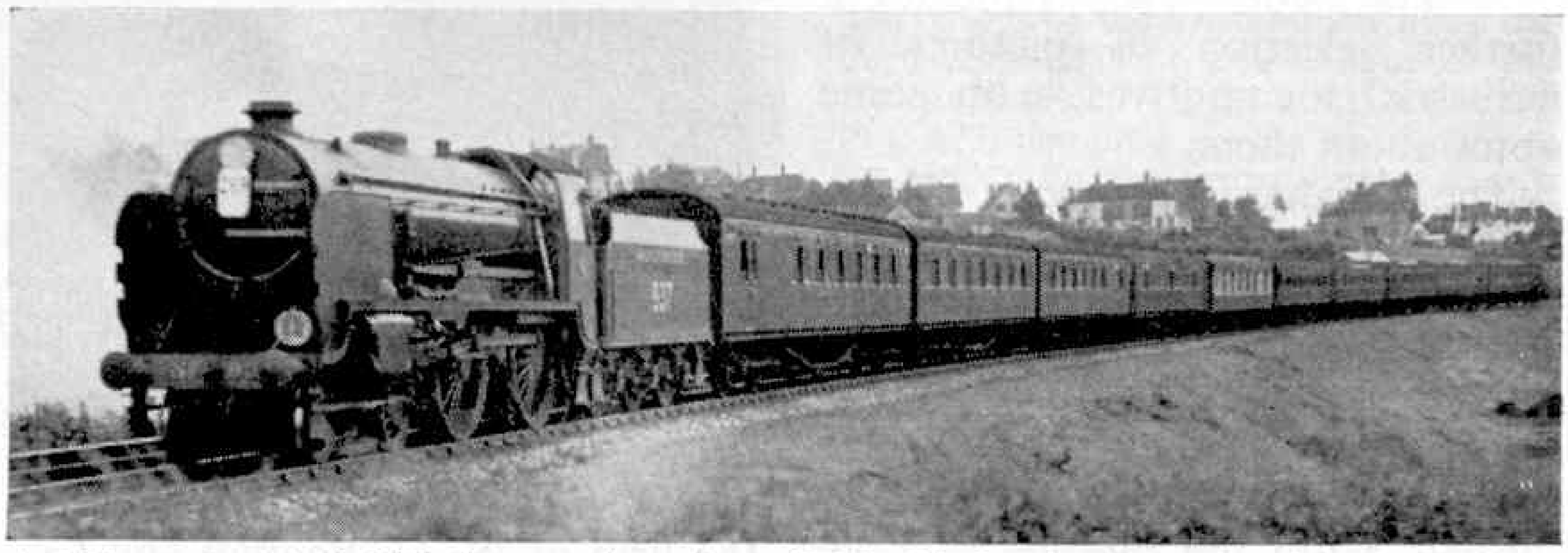


(Right) No. 35012 "United States Lines" entering Sidmouth junction with the down "Atlantic Coast Express". Photograph by R. F. Roberts.

At the top of the page the illustration by M. G. Martin shows No. 7340, one of the later W.R. 2–6–0s with side-window cab.

before Clapham junction was rather more prolonged than on the previous day, causing two to three minutes' loss. Thereafter the running was excellent and although as far as Basingstoke it was very similar in parts to *Braunton's* fine performance the bigger engine forged ahead and made up the lost time.

A grimy BI 4-6-0 No. 61331, passing Potters Bar with a King's Cross–Skegness train. Photograph by B. C. Bending.



A striking contrast to the BI in the upper picture is provided by this view of an immaculate Schools class 4-4-0 No. 937 "Epsom", climbing from West St. Leonards. This photograph was taken in the heyday of steam on the Hastings route, by the late C. A. Gostling.

Having averaged over 72 m.p.h. along the 71 miles from Wimbledon to Porton we were still accelerating at about 84 m.p.h. down the high-speed descent from the Wiltshire downlands, when a yellow warning signal was sighted. The line was not clear into Salisbury and we crawled up to a short signal stop beyond Tunnel Junction. The station was reached in 81 minutes for the 83¾ miles from Waterloo. If unchecked the run could have been made easily in 76 minutes, averaging 66 m.p.h.

The working time allowances to Salisbury and forward to Sidmouth Junction for this train, over many ups-and-downs, are the quickest on the Southern and require start-to-stop mean speeds of 62–63 m.p.h. including a margin for delays. There are, of course, many considerably faster British schedules in other Regions, largely employing diesel locomotive haulage.

That morning, incidentally, I had passed Basingstoke, nearly 48 miles from London, first at 10.6 a.m. aboard *The Royal Wessex* express (from Weymouth and Bournemouth) then again in the *A.C.E.* at 11.51, in each case at 70 m.p.h., and had travelled from Southampton to Salisbury via London, 163 miles, in just over three hours. And I had sampled all three of Waterloo's regular named trains within 24 hours, while holding a most reasonably-priced Railrover ticket available over the whole S.R. system for seven days.

With this ticket I went from Margate (Kent) to Poole (Dorset); London; Hastings; Portsmouth. On Isle of Wight, Hayling Island and Lymington Pier routes I travelled behind veteran tanks of classes 02, A1x and M7 respectively.

AROUND THE EASTERN REGION

As a separate expedition from my Southern journeys during the summer just passed, I travelled more than 900 miles within six days as the holder of an all-stations E.R. Railrover ticket. Although much else would have been possible, I was able to include King's Cross, Liverpool Street, Norwich, Bury St. Edmunds, Cambridge, Sandy, Hitchin, Peterborough, Doncaster, Lincoln, Skegness and Nottingham. It was from Skegness to Nottingham behind one of the numerous general-service B1 class 4-6-0s that my only steam journey took place, in a fast holiday train via Boston, Sleaford, beneath the East Coast main line north of Grantham, and along the former G.N.R. route to Netherfield, and Victoria Station, Nottingham. Other B1 engines were at Skegness on that summer Saturday, as well as L.M.R. class 5s, 43000 class 2-6-0s, with a few diesel-electric locomotives. I arrived there in a King's Cross train worked through by a Brush Type 2 diesel. Of course, until June this year this line was still partly steam-worked, and one of our pictures this month shows a B1 heading a train on this service.

In the course of my 900-mile tour a number of journeys in diesel railcars afforded splendid views of the track ahead, and of passing trains. Such observations were particularly interesting and comprehensive along the 44 miles of main line from Peterborough to Hitchin, on the way to King's Cross, when a good many fast diesel-hauled freights fully, or partially, vacuum-braked, empty wagon and parcel trains flashed by, together with still more speedy passenger expresses, some heading north at more than 80 m.p.h. Later at Sandy, on the way back to Peterborough—after a detour via Cambridge—similar traffic in both directions also was observed.

North of Peterborough, as on many lines in general around the Midlands and North, there was still considerable steam locomotive activity on freight, mineral and miscellaneous train duty. Although no longer normally rostered, Pacifics and other steam engines such as V2 2-6-2s and Class 9 2-10-0s have been reported from time to time since last June at King's Cross or neighbouring yards, coming up to London as substitutes for diesels, or on special workings.

At various places I saw the *West Riding*, *Talisman*, *Flying Scotsman*, *Norseman*, *Anglo-Scottish Car Carrier*, *Queen of Scots*, *White Rose*, *Tees-Tyne Pullman* and other through expresses making long, fast, non-stop runs. Some rather distant views of railway operation were enjoyed from my room at the Great Northern Hotel, Peterborough. Part-way journeys were made in sharply-timed main line trains, including the mid-day Sheffield Pullman, on the G.N. Line, and between Ipswich and Norwich, G.E. Line, behind diesel-electric locomotives of Type 5 Deltic; Type 4: 2,750 h.p. D1500, 2,500 h.p. Peak, and 2,000 h.p. D200; also Type 3: 1,750 h.p. classes. I logged some stirring examples of rapid acceleration and fast hill climbing, together with one maximum speed of 95 m.p.h., with No. D1528 on the heaviest train as it happened, and several others around 86–92 m.p.h., with some gains on schedule.

W.R. "GIANT STRIDES"

The *Giant Strides* heading above figures prominently on W.R. posters and folders announcing the greatly improved and accelerated passenger services introduced last September to and from Paddington–Cardiff–Swansea and princi-

(*Continued on page 533*)

TRACKSIDE NEWS

By "PLATELAYER"

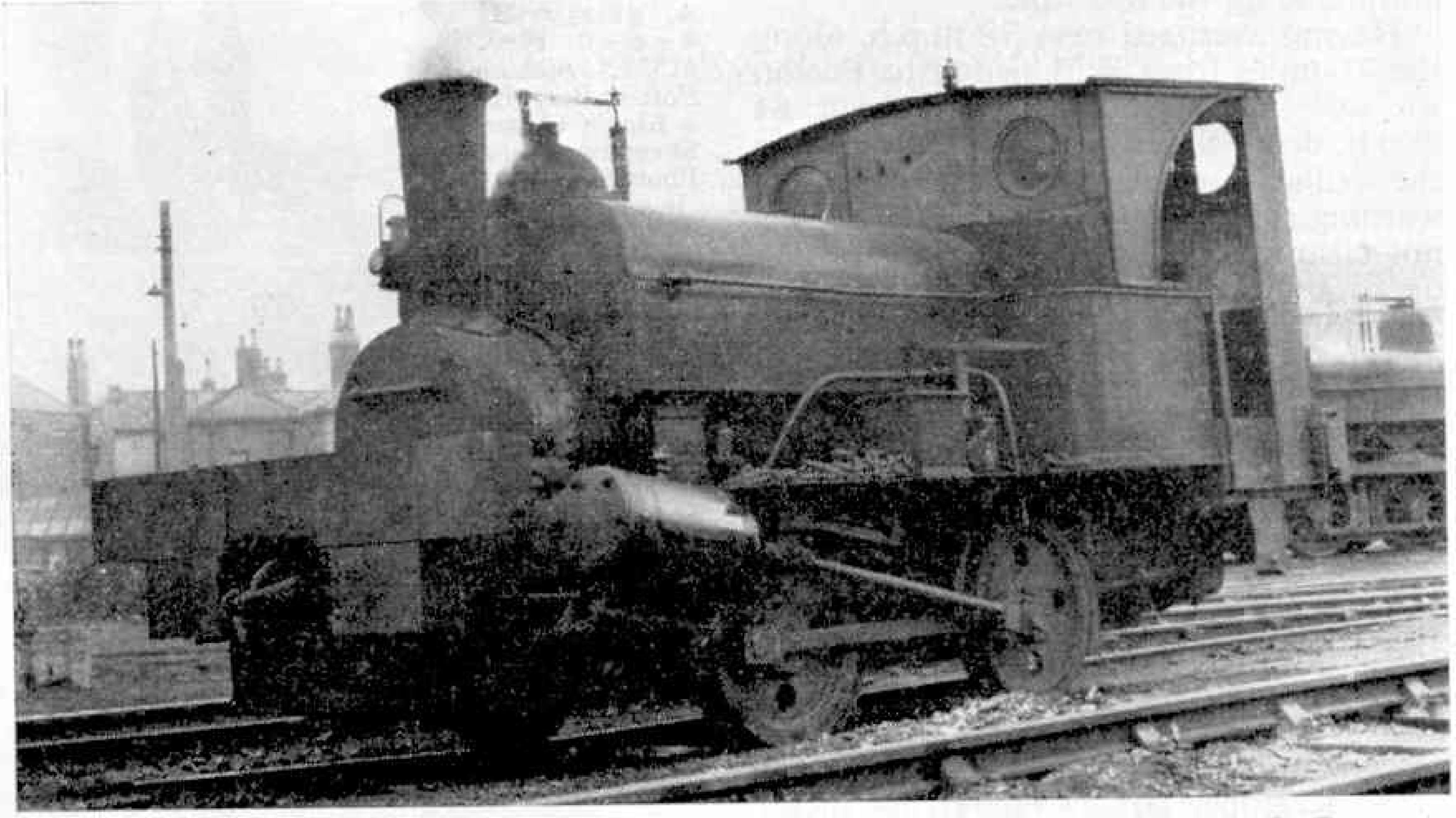
More About Industrial Locomotives

AS promised in last month's "Trackside News" I include a further selection of pictures of industrial locomotives, with some notes about them.

The Seaham Harbour Dock Company operates extensive sidings on the coast just north of Sunderland in County Durham. These are connected to the harbour itself by a steep incline over which only very small locomotives are permitted. Until the summer of 1962 one of the machines so employed was among the last vertical-boilered locomotives at work in this country. This was withdrawn for preservation at the works of Head, Wrightson and Company Limited, where it had been built in 1873.

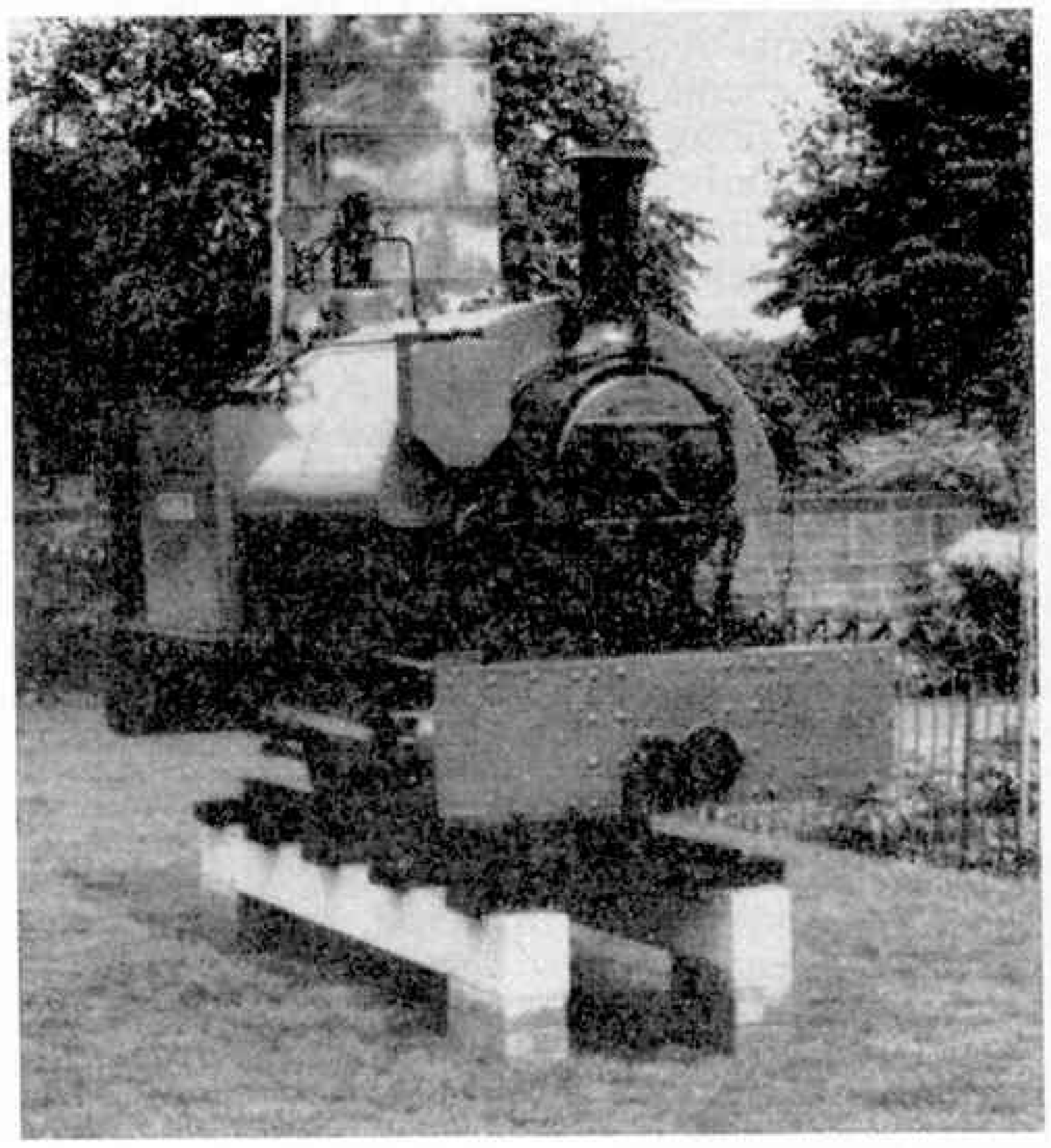
* * * *

To replace it, the Seaham Harbour Dock Company decided to rebuild an even older locomotive which had been lying dismantled at Seaham for several years. This was No. 18, an 0–4–0 saddle tank originally built by Lewin of Poole, in Dorset, in 1863. Now this centenarian is busy again, resplendent in a new livery of green with red lining which appears good for several years to come. It probably qualifies for the twin titles of oldest and smallest standard gauge locomotive still active in the British Isles


This locomotive, owned by Seaham Harbour Dock Company Limited, was built by Lewin of Poole, Dorset, in 1863. It was photographed by Mr. P. J. Lynch.

In November 1962, the Stafford Railway Circle was offered an 0–4–0 ST *Isabel* which was built by the firm of W. G. Bagnall and Co. Ltd., at their Stafford Works, in 1897, for the Cliffe Hill Granite Company Limited, of Markfield, Leicestershire. The locomotive had previously been repainted by the Stafford Works in 1952, after it was returned by the Cliffe Hill Granite Company.

After Stafford Works had been absorbed by English Electric in 1962 the Stafford Railway Circle found the locomotive a home in Stafford where it was placed on a plinth. It can be seen near the town's new £1,000,000 railway station, and is intended to be a visual memorial of the town's former railway industry. *Isabel* was formally handed over to the town council in June 1963 and after it had been restored by members of the circle. The photograph shows the locomotive in its new resting place.


The diminutive locomotive shown in this photograph is known as "Isabel" and is preserved outside the new £1,000,000 station in Stafford. You see it here on its plinth by Victoria Road. The photograph is taken by Mr. G. A. Brooks.

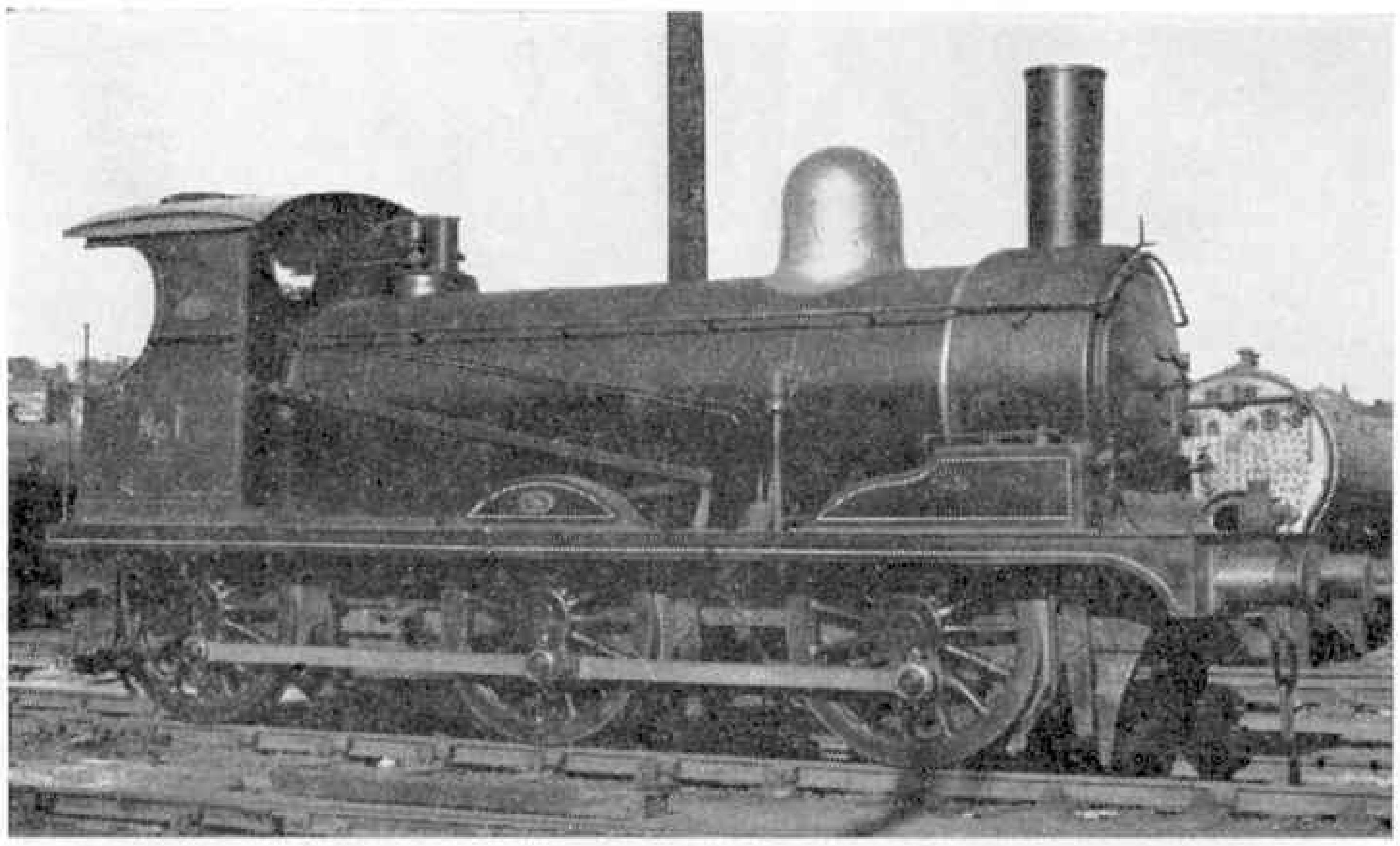
* * * *

As locomotive classes belonging to the former standard gauge railway companies became obsolete, many engines were sold to private concerns for use on industrial railway systems. Such a locomotive may be seen in one of our photographs. This particular locomotive belonged to the former Great Eastern Railway Company until the grouping of 1923 when it was absorbed into the London and North Eastern Railway and classified as J15 bearing the number 7690. The locomotive was subsequently sold to Bairds and Scottish Steels Limited where it was employed for many years on their private railway system. Note that when the locomotive was photographed it still possessed its old numberplate and had acquired a polished brass dome.

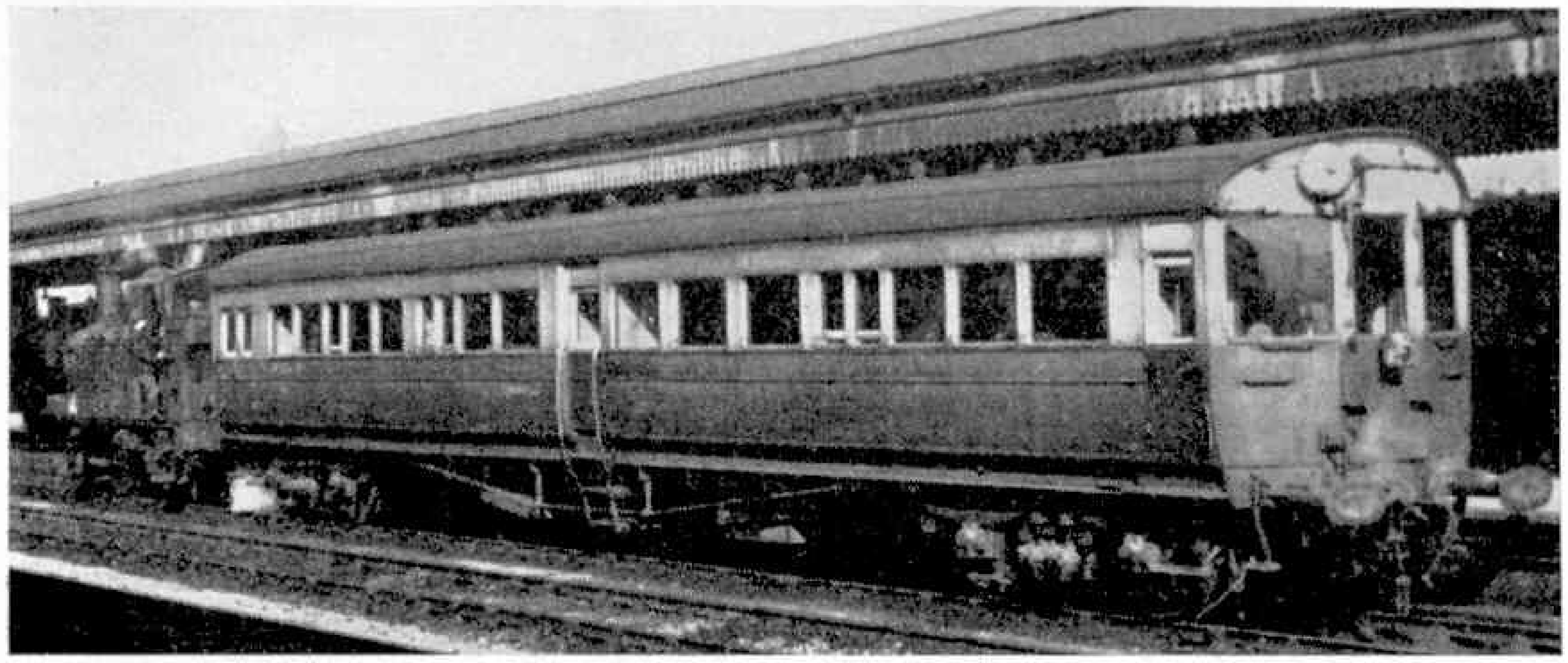
* * * *

The Blenheim and Woodstock Branch was unique in the respect that it was owned by, and indeed built at the expense of, the Duke of Marlborough. It was opened on May 19, 1890, and ultimately closed on February 27, 1954.

The branch ran from Kidlington Station (on the Oxford to Banbury



Left: This ex-L.N.E.R. J15 Locomotive, bought by Bairds and Scottish Steels, Limited, is typical of the many pre-grouping engines purchased by industry, to work on railway systems other than those owned by British Railways. Photograph by C. Lawson Kerr.



A push-pull train stops in Oxford Station on its way from Blenheim and Woodstock. This photograph was taken by Dr. G. D. Parkes on February 27 1954, the last day on which the branch was open.

main line) to Blenheim and Woodstock. One intermediate halt was made at Shepton and Cherwell. The entire branch was purchased by the Great Western Railway for £15,000 in 1897. The G.W.R. also worked the line from its inception. The branch was latterly worked by a push-pull set having a Collett 1400 class 0–4–2 tank locomotive. Our photograph shows a through push-pull train from Blenheim and Woodstock at rest in Oxford Station on the last day on which the branch was open.

* * * *

The year 1963 has been an eventful one for the two-foot gauge Festiniog Railway, for in addition to the centenary celebrations described in the August issue of the *Meccano Magazine* the railway ran a special train on August 24 for the group of schoolboys known to volunteers and permanent staff as "the Tadpoles". Also travelling on the train were members of Portmadoc Town Council and the Headmaster and Board of Enfield County Secondary Modern School. The Director of Education for Enfield was also present on the trip, and the entire train was served with a buffet supper. A meeting on the previous evening at Portmadoc Town Hall was also held in honour of "the Tadpoles", and on this occasion the council presented the boys with a cup to mark the tremendous amount of work they had done for both the Festiniog Railway and Portmadoc Town.

During this year also the locomotive *Linda* has been in regular passenger service on the Festiniog line for the first time. Those of you who may be accustomed to seeing the more famous Festiniog locomotives at Portmadoc will be interested to learn that the company hired *Linda* from the Penrhyn Railway Company in 1962. This engine is one of the three narrow gauge main line 0–4–0s owned by the Penrhyn Quarry, the two others being *Blanche* and *Charles*, the latter is now in Penrhyn Castle museum. *Blanche* is still on the Penrhyn Railway.

The locomotive runs resplendent with a polished brass dome and black paintwork. Visitors to the Festiniog Railway find it particularly fascinating because of its inclined cylinders and open backed cab, all adding to the charm of this 1ft. 11½ in. gauge railway running through some of the most interesting scenery to be seen in Wales.

Other locomotives belonging to the Festiniog Railway are *Merddyn Emrys* and *Prince* which together worked the train services, with *Linda*, last summer.

Since the Festiniog centenary celebrations No. 1 *Princess* has been on view at Harbour Station. This locomotive, however, is not serviceable. Another Festiniog engine, *Earl of Merioneth* was not in active service owing to the fact that the bogie and firebox were awaiting attention at Boston Lodge.

Today, steam trains have virtually disappeared from the face of South-East England, and before long they will have become merely a memory. At Sheffield Park, in Sussex, however, a concerted effort to save this passing scene of our national life has come to fruition through the devotion and untiring efforts of railway enthusiasts up and down the country. A section of the well-known Bluebell Line, twice closed during its 80-years' history, is preserved today as a "living" museum for historic railway locomotives and rolling stock. Period-piece trains run south from Horsted Keynes through five miles of the glorious Sussex Weald to Sheffield Park, which is the headquarters of the Bluebell Railway and possesses a museum of railway relics and models.

In 1962, its third year of operation, the railway recorded more than 120,000 passenger journeys. Each year there is something fresh for the visitor to see. Two more of the locomotives there have been restored to the splendour of their former liveries. An E4 class radial tank No. 473, acquired a year ago, repainted in Marsh umber brown livery and renamed with its original L.B. & S.C.R. name *Birch Grove*, was the centre of attention at a naming ceremony at the opening of the season. The other engine, No. 27, known formerly to many as *Primrose*, has relinquished its name in order to don its former S.E.C.R. livery. Complete with that company's crests and full lining the engine is much sought after by photographers.

For those particularly interested in the coaching stock this has been a year of unprecedented expansion. Pride of place must go to the former L.N.W.R. Observation Car No. M15843M, likely to be the only one of its kind to be preserved, and this has been in great demand all through the season. To supplement the hard-worked Chesham Set, three ex-S.E.C.R. ten-compartment thirds of different vintages were aquired in the spring together with a Maunsell Dining Car, No. S7841S, to provide comfortable restaurant seating facilities alongside the Buffet Car which arrived a year ago.

Once again the B.R.P.S. has organised the running of two interesting excursions. The "Spring Belle" saw a new advance made when the Bluebell Railway's own locomotive *Birch Grove* ran through from Victoria to Sheffield Park, while on September 15 the visit of the famous Caledonian Railway Single No. 123, together with the restored L.S.W.R. T9 No. 120 on the "Scottish Belle", proved the highlight of the 1963 season. Many other privately-sponsored rail excursions have made their way to Horsted Keynes from different part of the country and coach bookings approaching the 500 figure carried thousands of people to Sheffield Park during the recent summer.

The future outlook is likely to be one of consolidation, as the society is very shortly to be faced with the purchase of the line which they at present lease.

ROUND THE SOCIETIES

Readers wishing to join any of the organisations whose activities are outlined below should contact the Secretary of the Society concerned and not *the* Meccano Magazine *offices.*

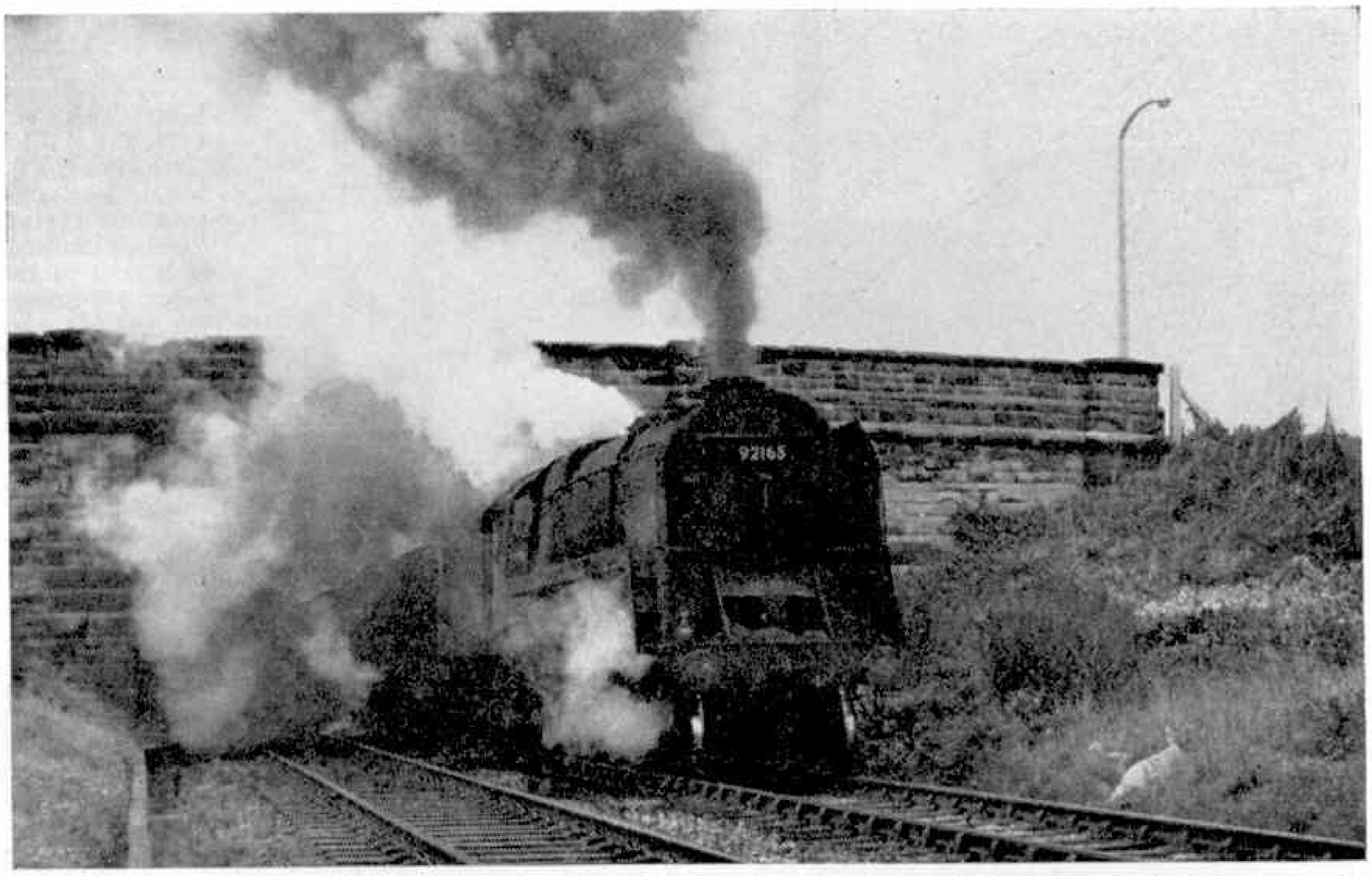
RAILWAY AND CANAL HISTORICAL SOCIETY

A week-end study tour of early railway development in the Preston area was recently arranged by the Railway and Canal Historical Society. This provided a detailed and well-organised programme of visits to railway sites of historic interest in the area. The opportunity of a boat cruise on the now commercially disused Lancaster Canal was also taken. Based on Preston, the Society's tour included visits in the town of Preston itself to the former West Lancashire Railway station at Fishergate Hill, the Preston and Longridge Railway old station in Deepdale goods yard, and to the site of the former stations at Maudland.

From Preston, the tour continued to Garstang, where the Garstang town station of the Knott End Railway was seen. From there, a visit to Lancaster was made to see the original Lancashire and Preston Junction Railway Station at Penny Street, and to the early packet boat house on the Lancaster Canal. Many further visits along the Lancaster Canal were to Glasson Dock, Galgate and Johnson's Hillock locks, while considerable interest was shown in the line of the former Lancaster Canal tram road between Preston and Walton Summit.

The main event of the tour was a cruise on the Lancaster Canal from Bolton-le-Sands to Lancaster, which included the crossing of the Lune by John Rennie's notable aqueduct.

Copies of the historical notes which were issued to participants on this tour may be obtained from the society's Assistant Honorary Secretary, Mr. P. A. Stevens, of "Kettlebyerigge", Hunter's Rise, Kirby Bellers, Melton Mowbray, Leicestershire, price 1/9d. post free.



Mr. T. F. Lane, member of the Merseyside Model Railway Society, took this photograph of stoker-fitted 9F No. 92165 as it was passing under Hoylake Road bridge, Bidston, Wirral. The train was working the only Sunday service from Bidston Dock to Shotwick sidings.

BIRMINGHAM MODEL RAILWAY CLUB

The programme for December is: Wednesday 4th, "The Young Ones", a panel of three younger Members will speak on "My Layout"; Thursday 12th, Track Night, 18 mm. Layout; Wednesday 18th, Track Night, 16.5 mm. Layout; Thursday 26th, No Meeting.

BURY ST. EDMUNDS AND DISTRICT M.R.C.

The Bury St. Edmunds & District Model Railway Club has a present membership of sixteen, whose interest is the building of the large permanent layout on Great Eastern practice. Meetings are held at The Railway Hut, at the rear of the Old Maltings, Mildenhall Road, every Thursday evening. Railway enthusiasts over the age of sixteen are invited to join the club by writing to the Hon. Secretary, Mr. Jack Hill, of 2 Baldwin Avenue, Bury St. Edmunds.

CRAWLEY MODEL SOCIETY

December programme: Sunday 1st, Guided tour of the Underground. The guide-courier is Mr. F. J. Briggs; Friday 13th, Inter-Club Quiz, Croydon v. Crawley at Crawley; Friday 20th, Talk on the London General Omnibus Company by Mr. F. J. Briggs; Wednesdays 4th, 11th and Friday 27th, Track Nights; Wednesday 18th, Planned Running; Friday 6th, Working Night.

All meetings are held at Hut 30, Tilgate Forest Recreational Centre, which is open at 7.00 p.m. Further details from the Hon. Secretary, Mr. B. E. Champion, of 175 The Birches, Three Bridges, Crawley.

ROTHERHAM MODEL RAILWAY CLUB

The Rotherham Model Railway Club has decided to set aside periods during most meetings for discussion on members and visitors own layouts and problems. It is in this way that they hope to assist beginners in the problems they are likely to meet and to help them ultimately to get the most enjoyment possible out of the hobby.

The club meets on Tuesdays and Thursdays from 7 p.m. at Masborough Garage Yard. Although full membership is only available to persons over the age of 16, younger visitors are welcome. The club would like to hear from anyone who is interested but unable to attend the meetings. All communications should be addressed to the Hon. Secretary, Mr. A. Bradbury, of 30 Moor Lane South, Ravenfield, Rotherham, Yorkshire.

BEDFORD AND DISTRICT MODEL RAILWAY SOCIETY

The above newly-formed society is holding its first exhibition in the Drill Hall, Ashburnham Road, Bedford on Saturday December 7, 1963. The exhibition will be open from 10.30 a.m. to 8.0 p.m. and visitors are welcome. A winter programme is being arranged with film shows, talks and other activities and it is hoped an early move will be made into the new club room. Interested members are invited to contact the Hon. Secretary, Mr. L. Church, of 6 The Graylings, Putnoe, Bedford.

THE ELIZABETHAN RAILWAY SOCIETY

Indoor meetings as usual at The Elizabethan Rooms, Station Hill, near Sutton-in-Ashfield, Notts., commencing

7.30 p.m.: Monday, December 2, Indoor Meeting, Programme—Talk by Mr. J. Cupit on "Railway Photography"; Friday, December 20, First Annual Dinner at the Farmhouse Kitchen, Sutton. Hon. Secretary, Mr. R. A. Kirk, of 59a Hartley Road, Kirkby-in-Ashfield, Notts.

EAST HAM AND DISTRICT MODEL RAILWAY CLUB

The programme for the present month is: December 2, Talk on old time coach construction; December 9, Practical Night 00; December 16, Track Night 00; December 23, Christmas Party; December 30, Natter Night.

Meetings are held each Monday at 7.00 p.m. at St. Gabriel's Church Hall, Aldebrook Road, E.12 (101 bus to the door). Details of events on club nights may be obtained from the Secretary Mr. G. R. Lloyd, of 32a Goldsmith Road, London E.10.

THE MODEL RAILWAY CLUB

Current programme: December 5, Track Night (L.M.S. Group); December 12, Track Night (All Groups).

All meetings take place at Keen House, Calshot Street, King's Cross, London N.1. For further details about the club please write to the Hon. Secretary, Mr. D. A. Boreham, of 135 Mandeville Road, Northolt, Middlesex.

WEST GLAMORGAN RAILWAY SOCIETY

The layout the society displayed at a general exhibition at Neath consisted of two baseboards, one of 16 feet by 9 feet, and the other measuring 8 feet by 2 feet, arranged in such a way as to depict the station and main line on the large board, and the branch to Pontypool Road running off at right angles on to the small board. Peco streamline track, supplied by various members, was used throughout, and the actual station layout depicted almost true to form. A timetable of half an hour's duration was drawn up and this was repeated every half hour throughout the duration of the exhibition, so that every operator knew the timetable inside out before very long. In that half hour was squeezed a varied programme depicting the numerous train operations actually carried out at Neath Station. The sequence started with "trains through the ages" at Neath Station, starting with the Tri-ang "Dean Single" set and ending with the freelance Hornby Diesel posing as an English Electric Type 3 engine, on a modern fitted freight train. This was followed by a short run of famous named trains at Neath, each hauled by one of the superb Hornby "Castle" class engines. The rest of the half hour was taken up with a variety of train movements in and through the station. Each train was announced over the loudspeaker as in real life, and this feature created much interest among the spectators.

WARWICKSHIRE RAILWAY SOCIETY

During 1964 three camping coach holidays are proposed. The first is from May 16 to 23 (Whit. week), an eight-day tour centred on North Berwick, visiting most motive power depots in Scotland and Northern England. The price will be from £17 19s. The second tour is from July 11 to 18, and is an eight-day holiday centred on Lavernock, visiting most depots in Wales. The price will be from £10 10s. The third is from July 25 to August 1, and will be centred at Hest Bank, visiting most depots in Lancashire, Cumberland, Northumberland, Durham, Yorkshire and Central Scotland. The price will be from £12 1s. 6d. The above camping coach tours are being run from Birmingham, London, Manchester, Sheffield and Leeds. During the August holidays a three-day tour of most depots in the Southern Region will be made; probably from August 24 to 26. Also to be held is a four-day rail tour from Birmingham to London, East Anglia, Lincolnshire and the Humber Area from August 30 to September 2.

The following special trains are also proposed. On March 28 from Birmingham, Crewe and Preston by Duchess Pacific to Glasgow for a coach tour of all Glasgow and Edinburgh Motive Power Depots. During May from Bristol, Gloucester, to Derby and Crewe Locomotive Works and Sheds. During July from Birmingham, Burton and Derby to Doncaster and York, and during August from Sheffield, Derby and Birmingham by A4 to Swindon, and Eastleigh Works. Prospective members should write to Mr. T. Beale, of 36 Allendale Estate, Studley, Warwickshire.

NEWBURY MODEL RAILWAY CLUB

The Newbury Model Railway Club was formed in October 1960, and since this date has been engaged in building a 00 gauge layout, on a baseboard 16 ft. by 8 ft. with a central operating well. No specific design, or regional practice has been followed, but the design is versatile, and the layout can be worked by any number of operators from one to six. There is also a single-track branch line. Carriage sidings, a locomotive depot at low level, and an elevated goods yard are other features of the layout. The three stations, not yet named, and the main through station serve the main and suburban lines, and there is also a bay for the branch line train.

Work is just beginning on the main stations' platform and buildings, and the control panel is being wired to the layout. A long narrow layout conforming to a particular prototype is projected when the present layout is finished, and the two layouts will be linked together.

Club membership is open to adults over 16 years, and to junior members over 12, at the discretion of the committee. Prospective members should write to the Hon. Secretary, Mr. V. Shimmings, of 2 Link Road, Newbury, Berks.

WEST FIELD RAILWAY CLUB

The club is preparing for its second annual exhibition which will be held at the Church Hall, Acomb, York, on January 2, 3 and 4. It is hoped to have about 25 stands, and these will include some 15 working layouts, including Derek Naylor's Aire Valley Railway, the Wakefield Model Railway Society's railway in a TV set, and the club's own Lyme Bay layout. Also to be exhibited is the Britannia Railway Society's South Wessex Railway. There will also be a trade stand and representative stands from most of the major preservation societies. The club is busy reconstructing its "West Kroyfield section", which is a large 00 layout housed in the clubroom. Prospective members should contact the Club Leader, Mr. M. Cook, of Hook House, Station Road, Strensall, York.

MIDDLESBROUGH M.R. AND TRAMWAY CLUB

This club holds its meetings every Monday, Wednesday and Friday from 7.00 p.m. Prospective members should contact the Hon. Secretary, Mr. R. S. Banks, of 1 Grove Road, North Ormesby, Middlesbrough, for details.

RAILWAY PRESERVATION SOCIETY

The London Railway Preservation Society is pleased to announce that it has completed the purchase of L 44 from London Transport. This is an E class 0–4–4 tank engine built in 1898 at Neasden Works. It was the first engine to be built by the Metropolitan Railway and ran well over a million miles in service before withdrawal by London Transport. The engine will be stored at a temporary depot near Bishops Stortford until the L.R.P.S. opens its own line in the countryside close to North London.

The London Railway Preservation Society is the only active preservation group in this area and specialises in relics from the railways north of the River Thames. If you live in Essex, Hertfordshire, Middlesex, or North London, or are interested in the railways of that area, please write to the Hon. Secretary, L.R.P.S., at 8 High Stile, Dunmow, Essex, for details of how you can help to build up a vintage railway for North London. General Secretary: D. Noel Draycott, of 3 Wansbury Way, Swanley, Kent.

BURGESS HILL MINIATURE RAILWAY CLUB

Owing to the fact that the club recently lost its headquarters, the 15 members are currently negotiating for space at the local railway station. Although no permanent

(*Continued on page 533*)

CHRISTMAS GAMES AND PUZZLES

Twenty Questions To Keep The Family Guessing

1. Which world-famous scientist was born on Christmas Day, 1642? And which world-famous navigator died on Christmas Eve, 1524? (2 marks)
2. Which members of the British Royal Family have the name Christabel because they were born on Christmas Day? (2 marks)
3. What is the origin of the name Santa Claus?
4. Of which country was King Wenceslas the monarch? (2 marks)
5. Which British Sovereign began the tradition of a Royal Christmas Day broadcast? Where were the Royal broadcasts made during the last war? And where did the Queen deliver her Christmas message in 1953? (3 marks)
6. Every December the traditional figure of St. Nicholas "arrives" in Holland from Spain. What is the name of the Moorish servant who accompanies him?
7. Name the two former British colonies, beginning with the same letter, which were discovered on Christmas Day.
8. Who won the world heavyweight boxing title on Boxing Day, 1908?
9. December 25 is a quarter day. What are the dates of the other quarter days: (a) Lady Day; (b) Midsummer Day; (c) Michaelmas Day? (3 marks)
10. The New Year will be a Leap Year. Which of the following will NOT be a Leap Year—1964, 1980, 2000, 2100? (2 marks)
11. In which continent would you find Mt. Christmas?
12. In which oceans would you find an atoll called Christmas Island? (2 marks)
13. Who was the first British Sovereign to spend Christmas at Sandringham?
14. What sensational crime was committed in London on Christmas Day, 1950?
15. What colour is the flower of the Christmas Rose?
16. On what date each year does the British Sovereign offer gold, frankincense and myrrh at the altar? (2 marks)
17. Who introduced the Christmas tree to Britain?
18. The supposed remains of St. Nicholas were taken from Asia Minor in 1087. In which country were they reinterred?
19. What is the Christian name of Scrooge in Charles Dickens' "A Christmas Carol"?
20. Which King of England was crowned in Westminster Abbey on Christmas Day?

NOW TRY THIS FOR FUN

An interesting Christmas game which has been popular for many years is Buzz. The game is quite simple—at least to start with. The players sit in a circle and call out numbers in sequence, going clockwise round the room. For instance, the player starting the game calls out "one", the person on his left, "two", the person on his left, "three", and so on. The point is that when you come to a figure with a seven in it (7, 17, 27, etc.) or a figure which is a multiple of 7 (14, 21, 28, 35, etc.) you call out "Buzz". For instance, in the 40s the numbers 42, 47 and 49 are all Buzz while in the 70s, having called Buzz for No. 70 itself, you carry on Buzz 1, Buzz 2, Buzz 3, etc., 77 being Buzz-Buzz. If a player fails to call Buzz on a correct number he is out of the game and the players start again at 1.

If you want to make the game a little harder try "Fizz-Buzz". In this game as well as calling out Buzz as already outlined, you call Fizz whenever you come across a figure which contains a 5 or is a multiple of five. For instance, 20 is a Fizz number and 21 a Buzz. When you get to 35 you call Fizz-Buzz.

"Let's go in, Tommy . . . and ask for a Christmas Loan."

THE FOUR TABLES

"Well, what d'you think of them?" asked George, pointing to the four tables, each with its square top newly surfaced in square tiles. "I've just finished."

Ted examined his friend's handiwork. "Very neat", he commented. "I see each top has six fewer to the side than the next larger one."

"That's true, and all the wee tiles are identical." George smiled. "They were the top of a hideous old relic. It was square, too, and luckily the tiles were all there and I broke none."

Having just the right number was quite a coincidence. But how many was that?

SCHOOLBOY HOWLERS

Julius Caesar was renowned for his great strength. He threw a bridge across the Rhine.

* * * *

A buttress is a female goat.

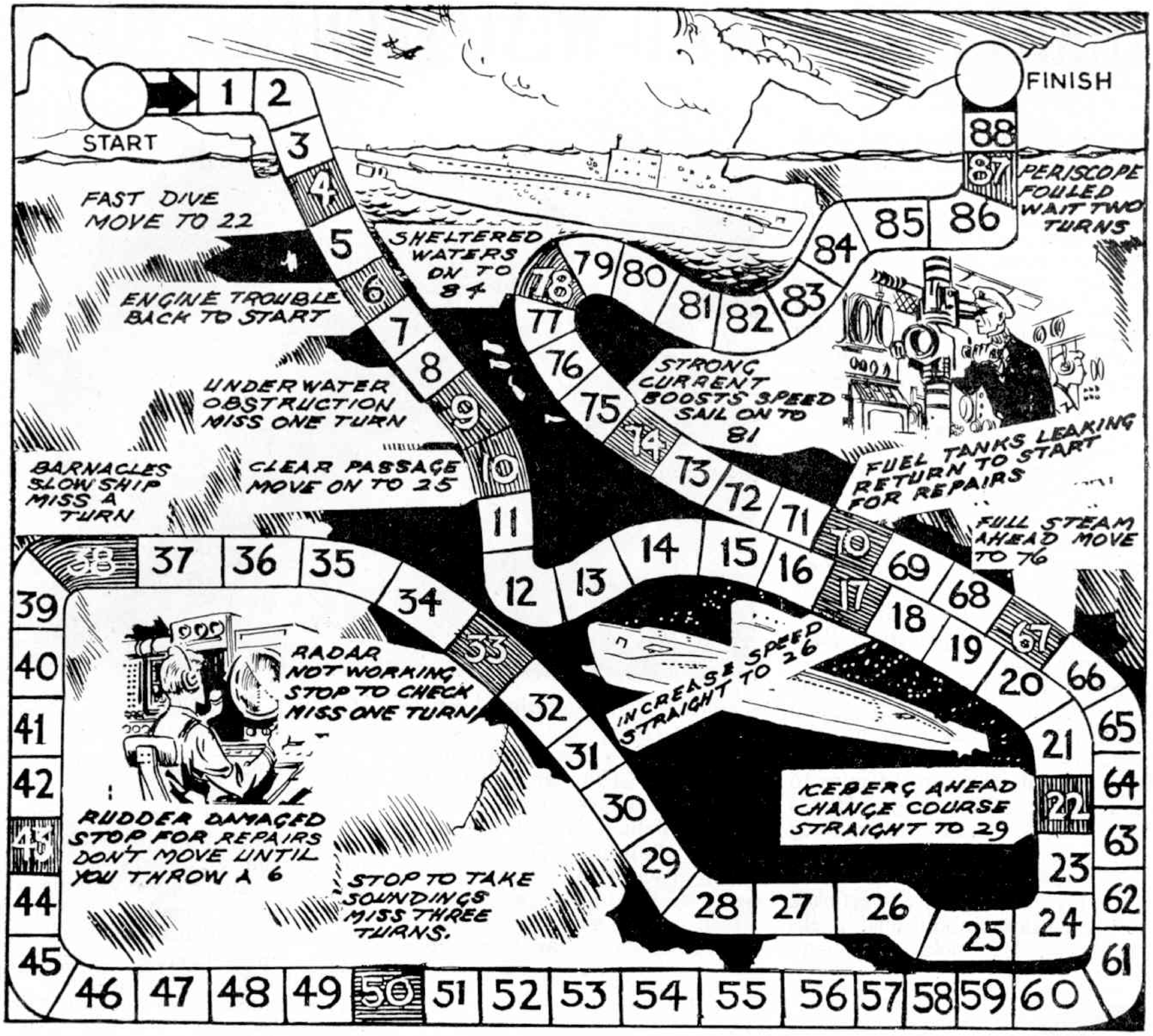
* * * *

Gorilla warfare means they are up to their monkey tricks.

* * * *

The earth makes a resolution every twenty-four hours.

Answers to the puzzles on these two pages will be found on page 531.


START
FINISH
FAST DIVE MOVE TO 22
ENGINE TROUBLE BACK TO START
SHELTERED WATERS ON TO 84
UNDERWATER OBSTRUCTION MISS ONE TURN
BARNACLES SLOW SHIP MISS A TURN
CLEAR PASSAGE MOVE ON TO 25
STRONG CURRENT BOOSTS SPEED SAIL ON TO 81
PERISCOPE FOULED WAIT TWO TURNS
FUEL TANKS LEAKING RETURN TO START FOR REPAIRS
FULL STEAM AHEAD MOVE TO 76
RADAR NOT WORKING STOP TO CHECK MISS ONE TURN
INCREASE SPEED STRAIGHT TO 26
ICEBERG AHEAD CHANGE COURSE STRAIGHT TO 29
RUDDER DAMAGED STOP FOR REPAIRS DON'T MOVE UNTIL YOU THROW A 6
STOP TO TAKE SOUNDINGS MISS THREE TURNS.

VOYAGE BENEATH THE ICE

Who's going to be first home for Christmas after this perilous voyage under the arctic ice? You'll want a dice (let the youngest throw first) and a different coloured counter for each member of the family. When you throw the dice, move your counter the number of spaces shown. If your atom-sub sails on to a striped square, up with the periscope and scan the instructions alongside. First home wins, of course.

CIRCUS VISIT

"I'll run you over to the circus", said their father, seeing the children counting their cash. "But you'll need money. How much have you all got?"

"I've as much as Ian", Peg told him, "plus a third of what Jim has."

"I've got eightpence more than a third of what Peg has", Ian declared.

Jim could play that game, too. "I've got as much as Peg, and also a third of what Ian has", he announced.

Their father worked it out. Can you do so?

"CINEMAS"

Here is an interesting elimination game. Around the wall put up the names of four or five local cinemas—the Lyceum, the Capital, the Majestic, the Odeon, the Palace, or whatever they might be. The players march round to music and when it stops they rush off and queue up for any one of the cinemas. The M.C., who has the names of all the cinemas on slips of paper, picks one from the bunch and, with an appropriate excuse, eliminates the players queuing up for that particular cinema. For instance, he may say, "All those queuing up for the Palace leave the floor. The projection room has caught fire and there will be no show." He will find he can make up lots of excuses. When only two or three remain in the game only two cinemas should be left for them to choose from.

CHRISTMAS DINNER

"How did the Christmas dinner go?" asked Susan. "Quite a job with so many?"

Anne laughed. "You're telling me", she said. "Half of us took no pudding, a third of us refused turkey, and two in the party would eat neither. However, a quarter of us ate both, so it wasn't all wasted."

People and their fads! How many were at that dinner?

THRILLS OF A WILD-WEST FRONTIER TOWN

YOU are aboard a real stage-coach, jogging down the Dry Gulch Trail. The team of four horses settle down to a steady gallop as your driver calls "Hay-yar!" and flicks the reins. From the crown of his battered cowboy hat to the toes of his dusty high boots, the old-timer in the driving seat looks every inch his part. For bearded "Weasel-Eye Willie" Bryan once actually drove the last regular stage line to run in the Adirondack Mountains, 'way back in 1912. Now, you are sitting beside him, driving through those same New York mountains, where green pine trees flank the dusty trail.

By
Sidney Allinson

Veteran driver "Weasel-Eye Willie" takes the reins aboard the Frontier Town Stage in the authentic replica of a colonial settlement.

Suddenly, just as the stage enters a deep ravine, a masked horseman gallops from cover with his six-shooters blazing. "Weasel-Eye Willie" hauls back on the reins to halt the onrushing stage. Hands held high, you and the other young passengers watch the bandit pull the express-box down, then turn to make his escape. "Have to get back to tell the sheriff about this!", yells the driver. He cracks his whip to send the team clattering back to Frontier Town.

This is one's first thrilling introduction to Frontier Town, the authentic replica of a colonial settlement built in a clearing near North Hudson, N.Y. As your coach joggles into town, you see an array of hand-hewn log buildings which seem to be something out of a Western film. Near the entrance, a stout blockhouse guards the log schoolhouse, neat little church and the cluster of pioneer cabins. Frontiersmen in fringed leather jerkins tend the ancient saw operated by a patient horse walking an old-fashioned treadmill. Other "mountain men" lean watchfully on their muzzle-loading Kentucky rifles, alert for Indian raids.

Re-enactment of a Western train robbery at Frontier Town. The train is an exact 1/13 scale replica headed by a funnel-stack locomotive.

Pioneer men and their wives live in the log cabins and work at the hard daily chores typical of frontier existence. The busy blacksmith's shop sends its clangour to mingle with the sounds of industrious carpenters and the rattle of the handloom and the potter's wheels. Further on, a group of cowboys loll against a chuck-wagon, singing a lonesome round-up song in tune with a Spanish guitar.

Just as your stage draws up to the Sheriff's Office, a Pony Express Rider goes galloping past in a swirl of dust. He is an actual postal employee, rushing local mail for delivery to the post office in North Hudson. As the dust settles, you notice the strange, chair-like contraption suspended over the village pond.

Soon the sheriff is back with the desperado in handcuffs. You and other children on the coach are asked to be witnesses at the badman's trial. He is first locked in the town pillory, wooden boards which hold a prisoner by the neck and hands. After an open-air trial, the jury sentences the robber to be ducked three times in the village pool. He is strapped into that contrivance you noticed near the pond. The ducking stool is a chair fastened at one end of a long pole hinged so that it may be raised and lowered into the water. While the sentence is carried out, the audience calls "One . . . two . . . three!" Then the dripping stage-robber is released with a stern warning to get out of town before sundown.

This make-believe "stage hold-up" is part of the action-packed show held every hour for visitors to Frontier Town. In every aspect of the programme, visitors, especially children, are encouraged to take an active part. When this first excitement is over, you are able to explore the unique community at leisure.

It was built to serve as a living museum so that adults and children alike could see how Americans lived and worked in times gone by, and provides authentic tableaux of both pre-Revolutionary and Western life. To this end, a strong emphasis is put on displaying working pieces of antique implements of log cabins, border farms and the open range. Many of these pieces are actual originals made long ago. Now refurbished, they serve to bring the past alive in a more colourful way than the static exhibits of conventional museums.

Frontier Town is the fruition of the owner's private dreams of an exciting place where children could learn about the past without signs reading "Please Do Not Touch". Once he had conceived the idea, Mr. Arthur Benson set about collecting all the things that went to make a pioneer settlement. It proved to be a difficult task.

Mr. Benson scoured the entire country, searching through old barns and attics, attending antique auctions, doing historical research in many libraries and collections. Old equipment was obtained from farmers and ranchers everywhere from New England to California. Auctions provided a John Stevenson Coach, a Concord Coach and an old Western Stage. They were shipped to the site of Frontier Town and put into working order. Parts of the horse treadmill were rebuilt from old plans and a dog treadmill was also discovered and repaired. In pioneer times, dogs were expected to work this contraption which activates a rocker-arm paddle for washing clothes or churning butter.

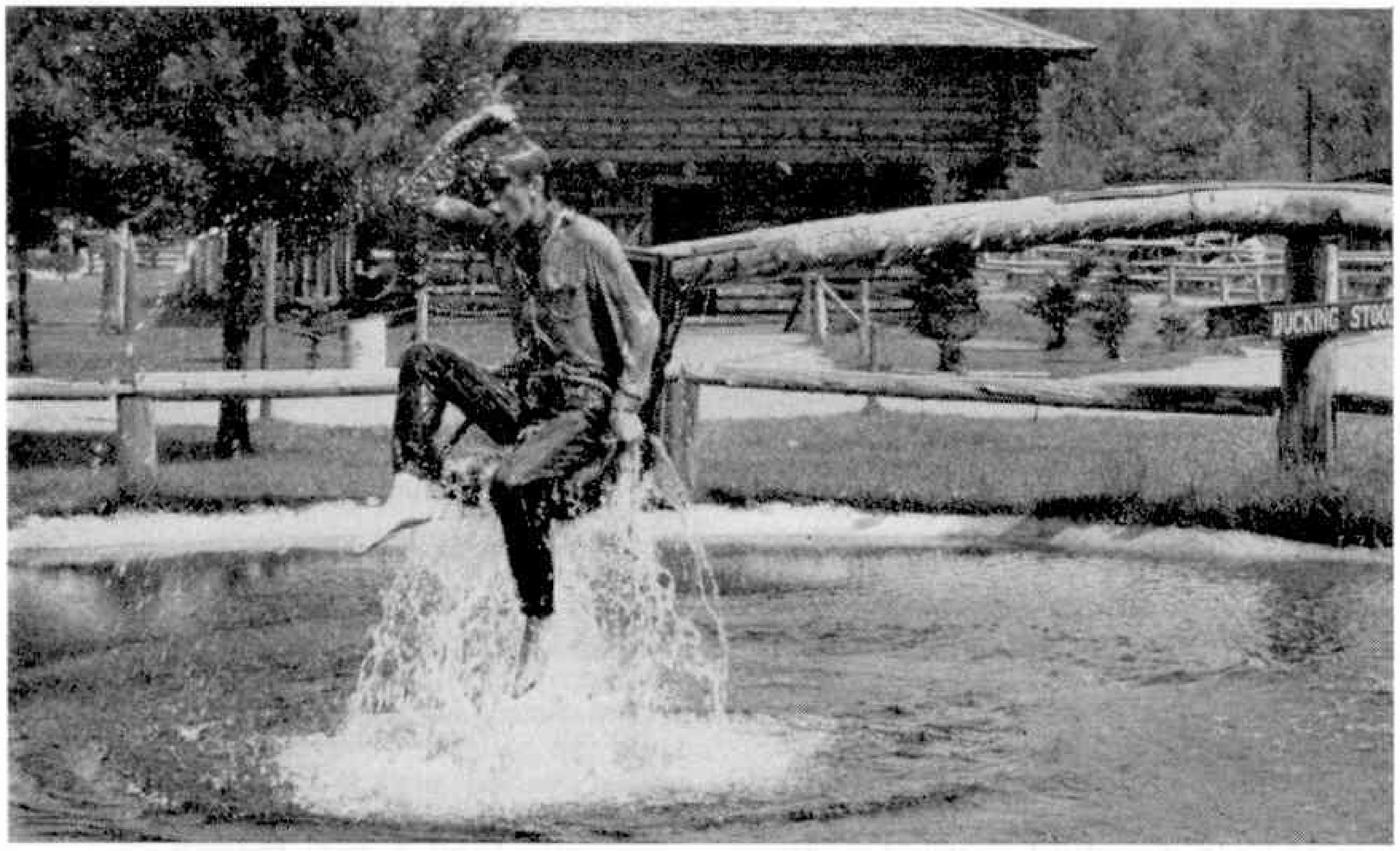
Even the buildings themselves were painstakingly constructed without the use of modern tools. Old-time methods were faithfully followed to fell local pines with iron axes, haul logs by horse-team and peel the timber with hand adzes.

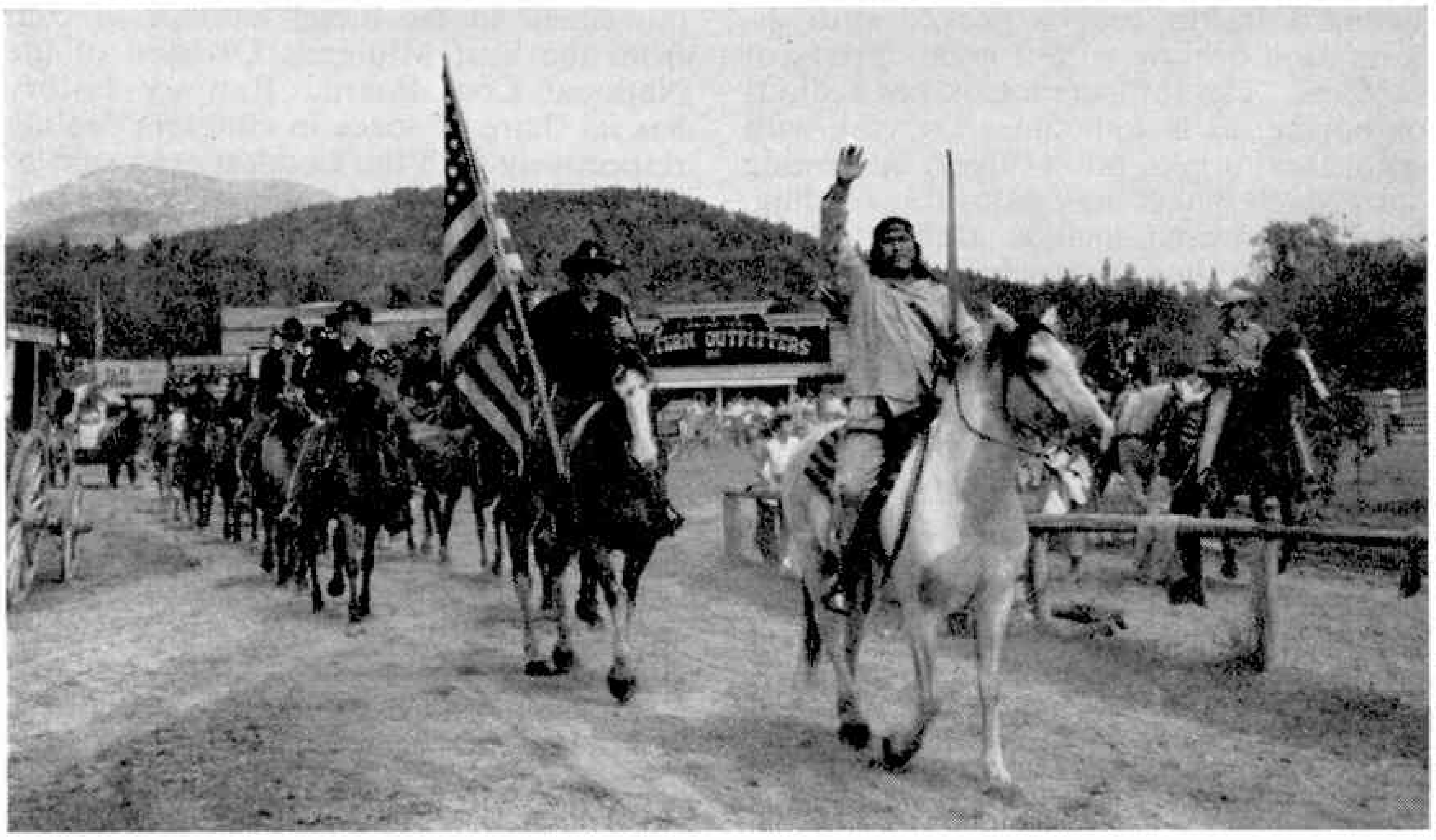
The leather-garbed frontiersmen and their wives in Mother Hubbard gowns are, of course, employed as part of the exhibition. But such is the absorption with which they go about their work that a very strong illusion of reality is maintained. Their training in many old crafts makes the equipment of practical value. Homespun cloth from the spinning wheels and looms is used to clothe the "actors" at Frontier Town. Firewood is cut by the horse sawmill; ironwork is produced at the smithy and utensils are made on the potter's wheel. A high-roofed colonial barn houses the animals typical of a homesteader's farm. Children may help in feeding and grooming horses, cows and oxen. Smaller fry are content to toss hay in the loft or pet the young lambs and kids that form part of the fascinating scene.

No aspect of Western life has been neglected. Here, you see a typical "nester" family packing their few belongings aboard a Conestoga covered-wagon before setting out to journey Westwards. Further on, you may climb up on the rails of the corral to watch cowboys give an exhibition of bronco-busting. Enter a cabin, and you can watch frontier wives in big sunbonnets card wool on wooden combs and make yarn on humming spinning wheels. In another cabin is an exhibition of the old art of candle-making. Two pioneer wives fashion stiff cord wicks, then build up candles by dipping them repeatedly in a cauldron of boiling wax.

Visitors who leave Frontier Town with a vivid appreciation of how life was in early America will agree with the comment of Mr. Benson, "As a boy, I always dreamed of being able to go somewhere I could play cowboys and Indians all day, and now, here it is!"

The ducking stool in action at Frontier Town. Below: Mission accomplished. The cavalry returns to Frontier Town after rescuing a covered wagon train that had been "beseiged" by a band of renegade Indians.





SHUTTLEWORTH COLLECTION

The Shuttleworth Collection of historic aeroplanes, cars, bicycles, carriages and tractors, is now open to the public at the Old Warden Aerodrome, Biggleswade, Bedfordshire. The opening times and admission charges are: Until March 28, 1964, daily, including Saturday and Sunday, 10 a.m. to 4 p.m., March 29 to October 25, Saturdays and Sundays 11 a.m. to 6 p.m., weekdays 10 a.m. to 4 p.m. Admission, adults 3/6d., children (over five) 1/6d. Free car parking.

NEW BOOKS FOR CHRISTMAS

Christmastime always brings a demand for good reading for boys. Below are reviewed a number of books, published recently, which will appeal to many "M.M." readers.

WITH Britain deep in a do-it-yourself craze, almost everything about the home that can be mended, modified or made is fair game for the D-I-Y enthusiast. Statistics indicate, however, that one of the most popular pastimes of all is home furniture-making, and readers' own experience will probably verify this. But even the best amateur carpenter requires plans and instructions from which to work. **Making Furniture Step by Step,** written by Richard Irving, F.Coll.H. (Warne, 12/6), contains full details of 25 pieces of furniture which can be built by anyone, be he seasoned expert or latest newcomer. This is made particularly possible for the novice because, for his benefit, Mr. Irving starts at the beginning with the best tools to have and passes through the various basic operations before embarking on the creative work proper. If you, personally, do not have a flair for woodwork, there may be another member of the family who has, and this book would make an excellent present for the right person.

* * * *

Aircraft Annual 1964 (Ian Allan, 12/6) is as informative and wide in its scope as ever. An expert summing-up, by the Editor, of important aviation happenings during the past year is followed by articles about the Cairo–Baghdad air mail, air freighting in Japan, the latest trends in airport development, early history of Farnborough, the U.S. Army's "VX" series of research aircraft, messages from Venus, and other absorbing aviation topics. As always, the book is lavishly illustrated in colour and half-tone.

* * * *

Locospotters' Annual (Ian Allan, 7/6). This provides its usual varied fare for the younger locomotive and railway enthusiast. Diesel, steam and electrically-operated services maintain the interest in their own specialised chapters. There are also separate sections dealing with the main line of the one-time Great Central Railway, and with the 2–8–0 Great Central locomotives adopted as a standard for military operation during World War One, some of which again rendered service overseas in World War Two. By no means least in importance among the many subjects covered is the German Federal Railways *Rheingold Express*, described as Europe's latest in luxury travel. The book is illustrated by 125 half-tones, with eight pages in colour.

Sons and fathers alike enjoy the thrilling stories of submariner Sinclair, written by John Wingate, D.S.C. From McMillan comes **Sub-Zero,** the fifth book in the Sinclair saga. Like its predecessors, it is packed with exciting incidents. It tells how Peter Sinclair and his American friend Hank Jefferson are put on the trail of a Nazi war criminal, and how Sinclair's nuclear submarine *Rugged* chases and shadows a mysterious whaling ship into unfamiliar waters to prevent an imminent world catastrophe. *Sub-Zero* is published at 12/6.

* * * *

The Book of Water Power by Geoffrey Gerard, A.M.I.E.E., F.R.S.E. (Warne, 10/6), is a companion to the **Book of Electricity** and **Book of Power Stations** by the same author. Straight from the coloured front cover, showing the Kariba Dam, the book will interest would-be engineers, who will find an immense amount to enthral them in the various chapters concerning the roles which civil, mechanical and electrical engineers have to play in the world of water power. Detailed surveys are provided of existing installations in Britain and overseas, and how water power has been harnessed to meet the world's needs in general is comprehensively outlined. Half-tone illustrations on a lavish scale are supplemented by a large number of diagrams.

* * * *

The Boys' Book of Modern Scientific Wonders (Burke, 12/6), is written by one of today's foremost science writers, Leonard Bertin, and is packed with information dealing with a great variety of subjects. The information is not tedious or boring, as is sometimes the case with school text books, but is "live", interesting data which makes very enjoyable reading. Subjects covered include atomic power, energy from the sun, machines that think, aircraft and rocket engines, space exploration, and many others besides. Mr. Bertin does not write reams of stuffy, technical theory but, rather, gives more general information in a manner easy to understand.

Excellent books for gifts include two others from Burke's, both priced at 12/6. **The Boys' Book of Space** by Patrick Moore, not only deals with the marvels of the modern space age but is a comprehensive account of the mysteries of space and the puzzle it has presented to scientists throughout the centuries. It is in every respect a fascinating book. In Burke's Pastime Series is Gert Linder's book **Photography,** translated and adapted by I. D. Strahan. For those who are interested in photography and want to learn about the subject from the word go, there could be no better book. It is lavishly illustrated and expertly written.

A book of real, but safe, experiments for boys or girls keen enough on chemistry to have their own laboratories at home, even if they are only set up when required on the kitchen table, is **Experiments for Young Chemists** by E. H. Coulson, M.Sc., F.R.I.C. and A. E. J. Trinder. All the experiments described in this very practical book, which costs 15/–, can be done with very simple apparatus, much of it home-made, and with small quantities of chemicals.

* * * *

From Macdonald and Company Limited comes the third edition of **The World's Warships** by R. V. B. Blackman, M.I.Mar.E., M.R.I.N.A. Priced at 15/– the book has been completely revised, with many additions, and nearly 70 of the illustrations have not appeared in previous editions. The author, who is Editor of "Jane's Fighting Ships", states in his introduction that the book includes "all the modern and major warships extant of the principal maritime powers."

* * * *

Trains Annual 1964 (Ian Allan, 12/6), maintains the high standard that has come to be expected of this publication. Each of the writers who contribute the various articles is an expert in his particular subject, so there is much to appeal to the railway lover, whatever his special interest may be.

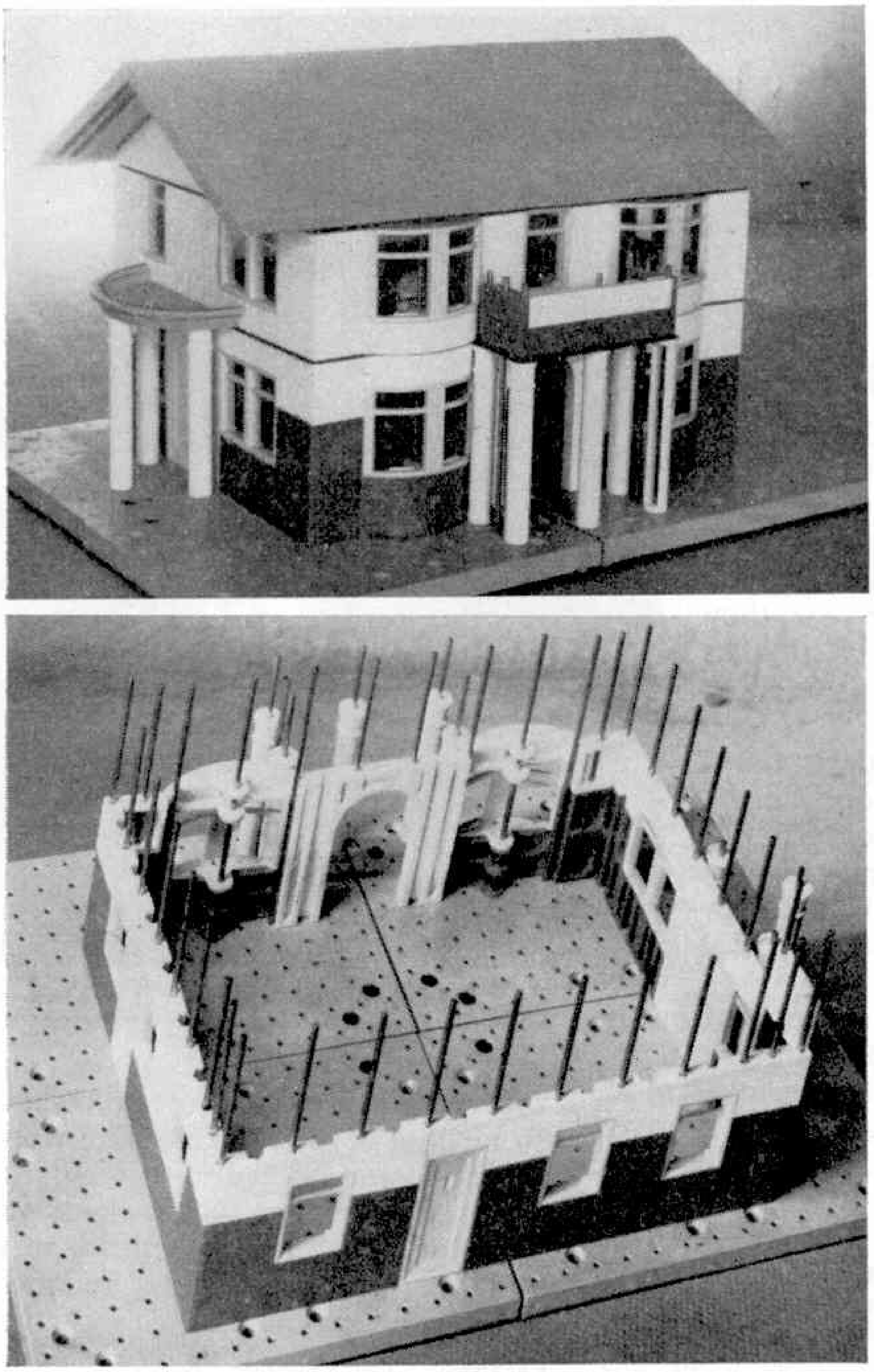
Two locomotive classes well known in their day, the magnificent Swindon Kings, and the more humble but popular and hard-working N7 0–6–2 tanks of Great Eastern origin, are the subject of successive articles. Diesel operation in Germany, and the gauge problem in Australia, form other varied topics, in addition to the working of the Tyne Dock–Consett iron ore trains and a new pattern of traffic movement in the diesel haulage of coal from the East Midlands Division of the National Coal Board. Railway history has its share of space in chapters dealing respectively with the London extension of the Midland Railway and early systems of passenger train communication.

Pictures are plentiful, 125 in number, while there are seven pages of illustrations in colour.

* * * *

Double Headed (David and Charles, 25/–), is double headed in the happiest sense, as it represents a joint effort on the part of father and son, Gilbert Thomas and David St. John Thomas respectively, telling their story of two generations of contagious railway enthusiasm. Appropriately, the senior writer contributes Part I, recalling boyhood activities in Leicester—or more especially London Road Station

(*Continued on page 534*)



The complete clubhouse is seen in our top picture. The other view shows the model built as far as the first storey.

COUNTRY CLUBHOUSE

"Architect" Continues His Series For The Bayko Builder

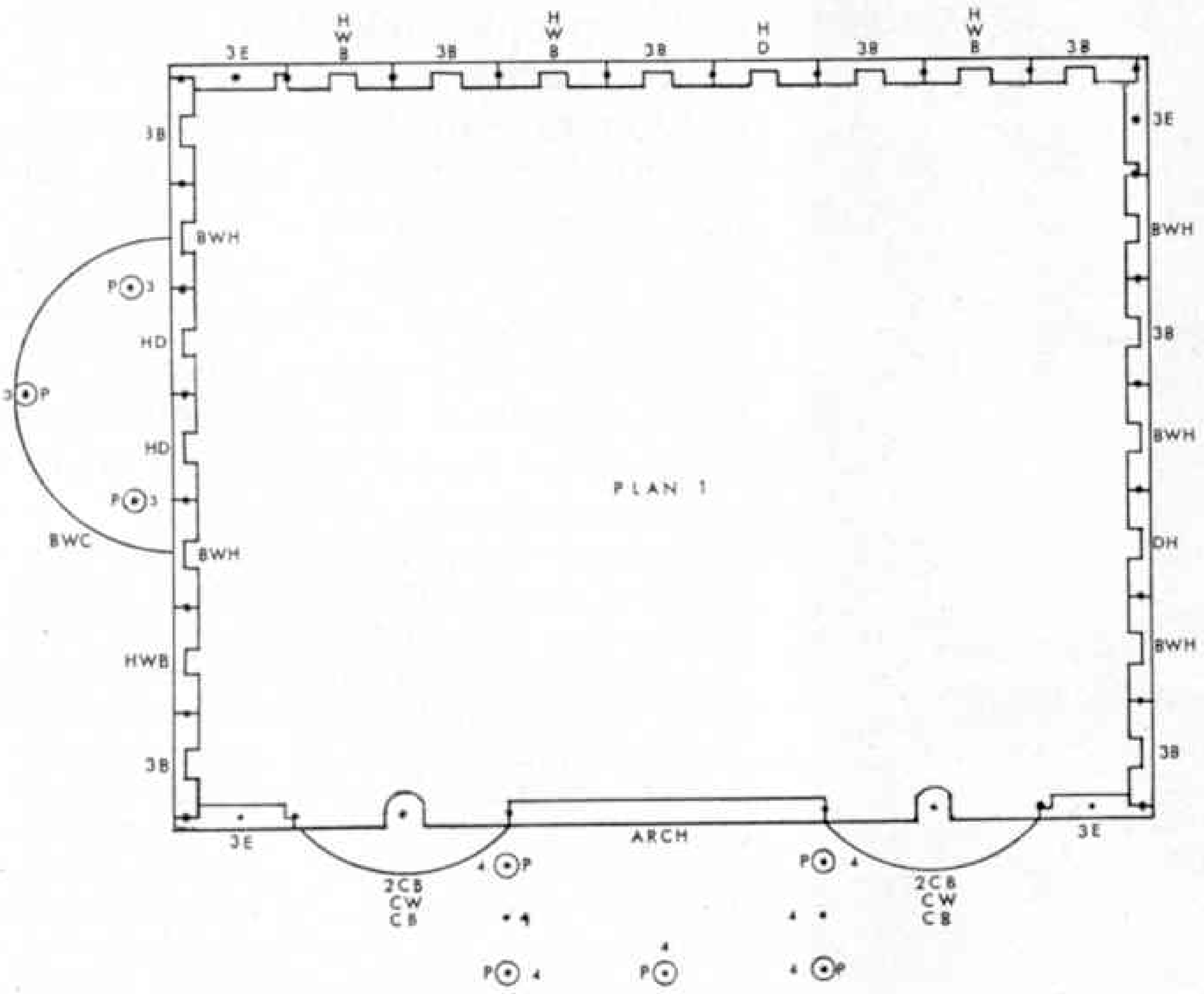
SET No. 14 is the one remaining Bayko Outfit in the range which, until now, has not produced a model for these pages. I say "until now", because the model illustrated here is built from Outfit No. 14, thus closing the gap.

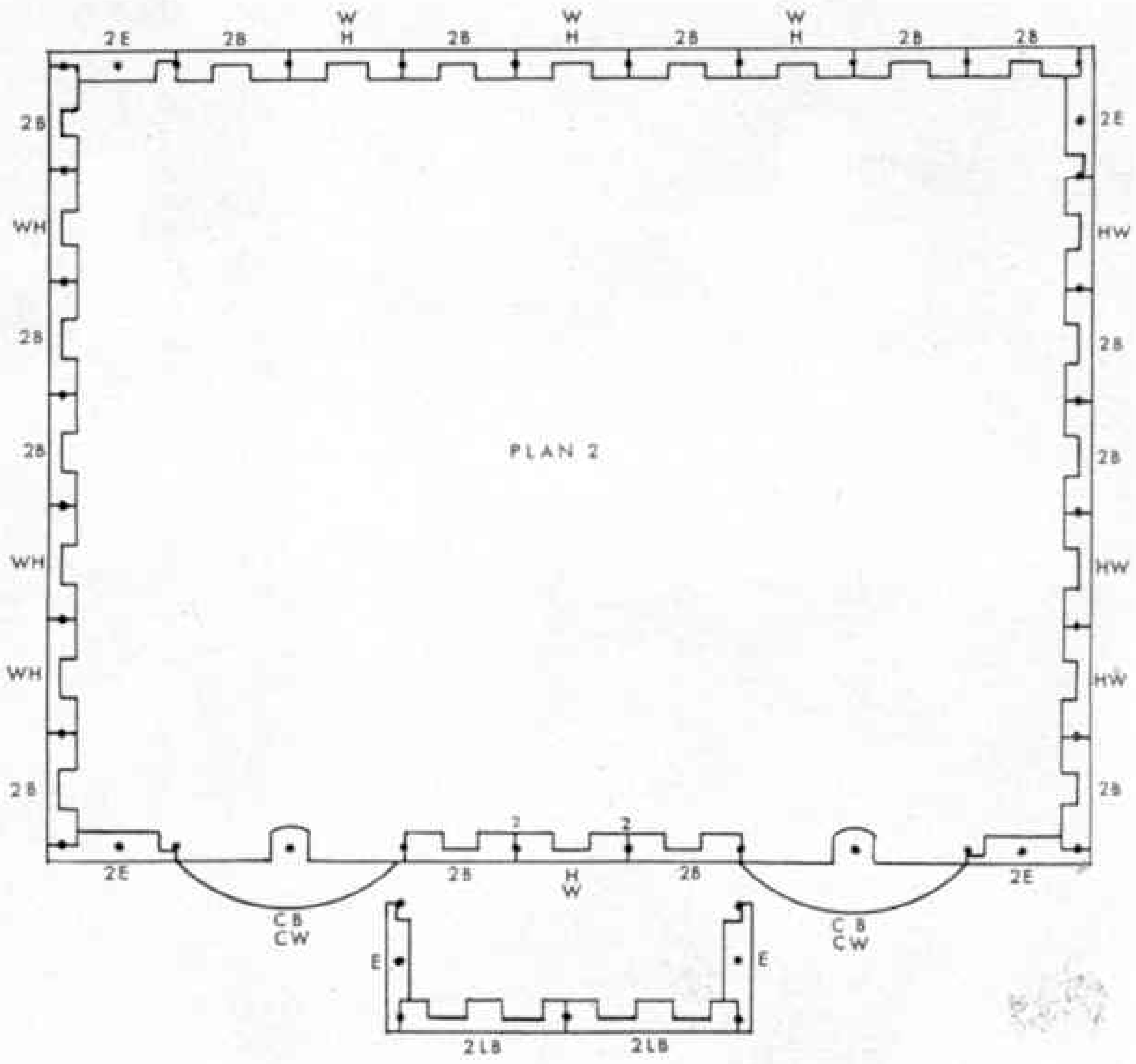
This is the first genuine double-storey building I have included in the series, and there are one or two points with which to take special care. It is most important, for instance, that the various-sized Floors be fitted above the third layer of Bricks. I have not shown the Floors on the plan, but the parts list below will indicate which to use. In particular, make quite sure that the 7×7 hole Floor projects forward so as to form a platform for the small balcony. No. 5 Brick Rods are used throughout except, of course, where shown on the plans.

Plan 1 is of the ground floor. After completing this, fit all Floors before proceeding with the second storey, as shown in Plan 2. While constructing the second storey it is important to note that the Half and Curved Bricks are placed below the Windows and not above them.

PARTS REQUIRED

1 Arch; 4 Bases; 6 Base Links with Screws; 1 Bay Window Cover; 24 Red Bricks; 37 White Bricks; 4 Red Curved Bricks; 4 White Curved Bricks; 10 Red End Bricks; 12 White End Bricks; 23 White Half Bricks; 2 Red Long Bricks; 2 White Long Bricks; 2 No. 2 Brick Rods; 3 No. 3 Brick Rods; 7 No. 4 Brick Rods; 34 No. 5 Brick Rods; 4 Doors; 1 Floor 7×7 holes; 1 Floor 15×6 holes; 1 Floor 13×9 holes; 1 Floor 15×11 holes; 19 Glazing Materials (Window); 4 Glazing Materials (Curved Window); 8 Pillars; 2 Roofs, type D; 2 Roof Ends, type D; 4 Corner Ties; 14 Straight Tie Bars; 19 Windows; 19 Curved Windows.





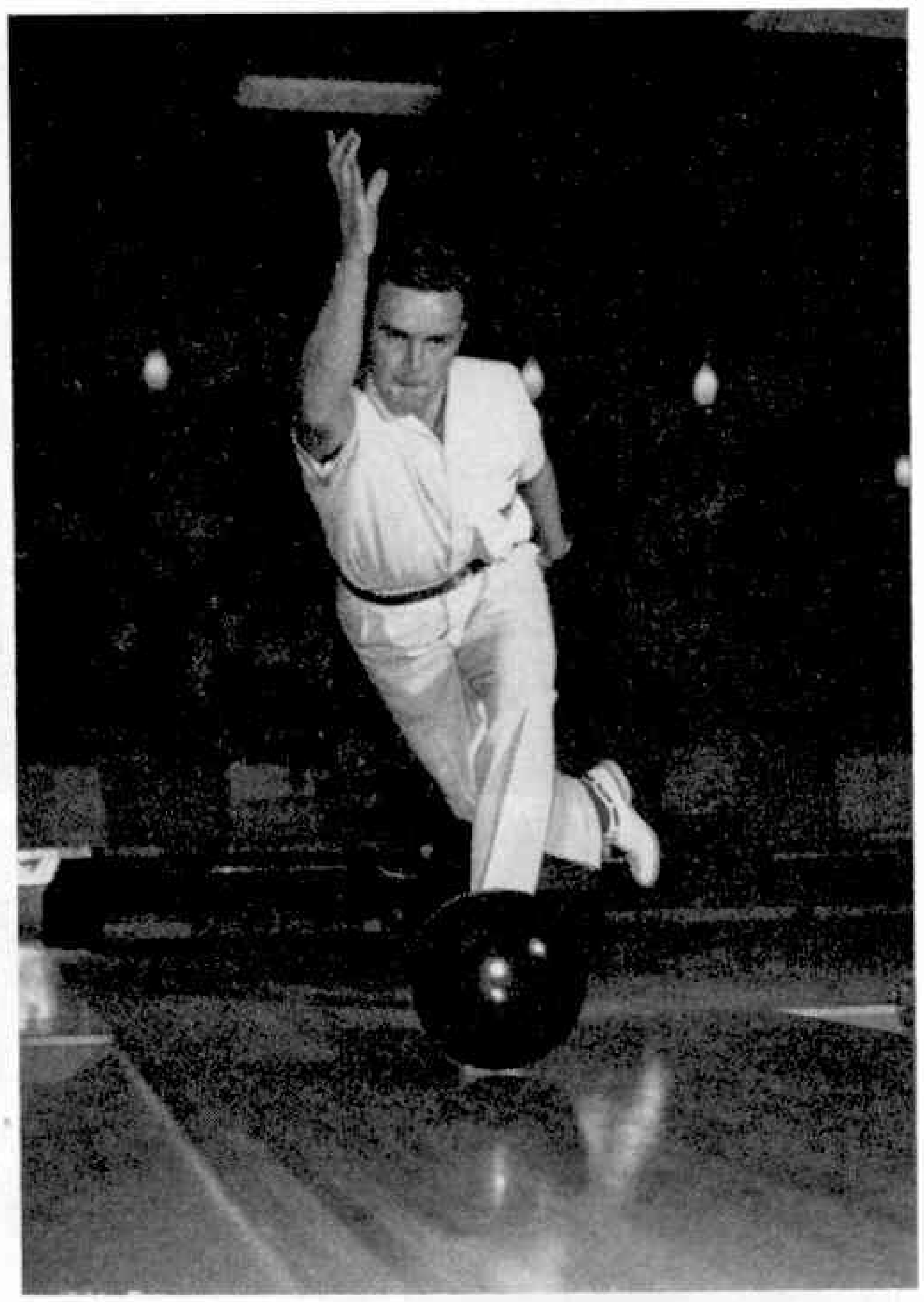
Ten-Pin Bowling—Our Oldest, And Newest, Game

LONG before the pyramids were built, the Egyptians were keen bowlers. Today, there are various developments of the game they once enjoyed. One is known as ten-pin bowling—a recreation that has more followers throughout the world than any other indoor sport. Top people of the game in Britain aim to bring this fascinating, watch-it-on-TV sport as near to our homes as possible and estimate that at the moment well over 100,000 people live within three miles of a bowling centre. By the end of the year, they hope to boost this figure to a quarter of a million folk of all ages who will be able to enjoy a few hours "skittling" within a short walk or bus ride of their homes.

By
WILLIAM AITKEN

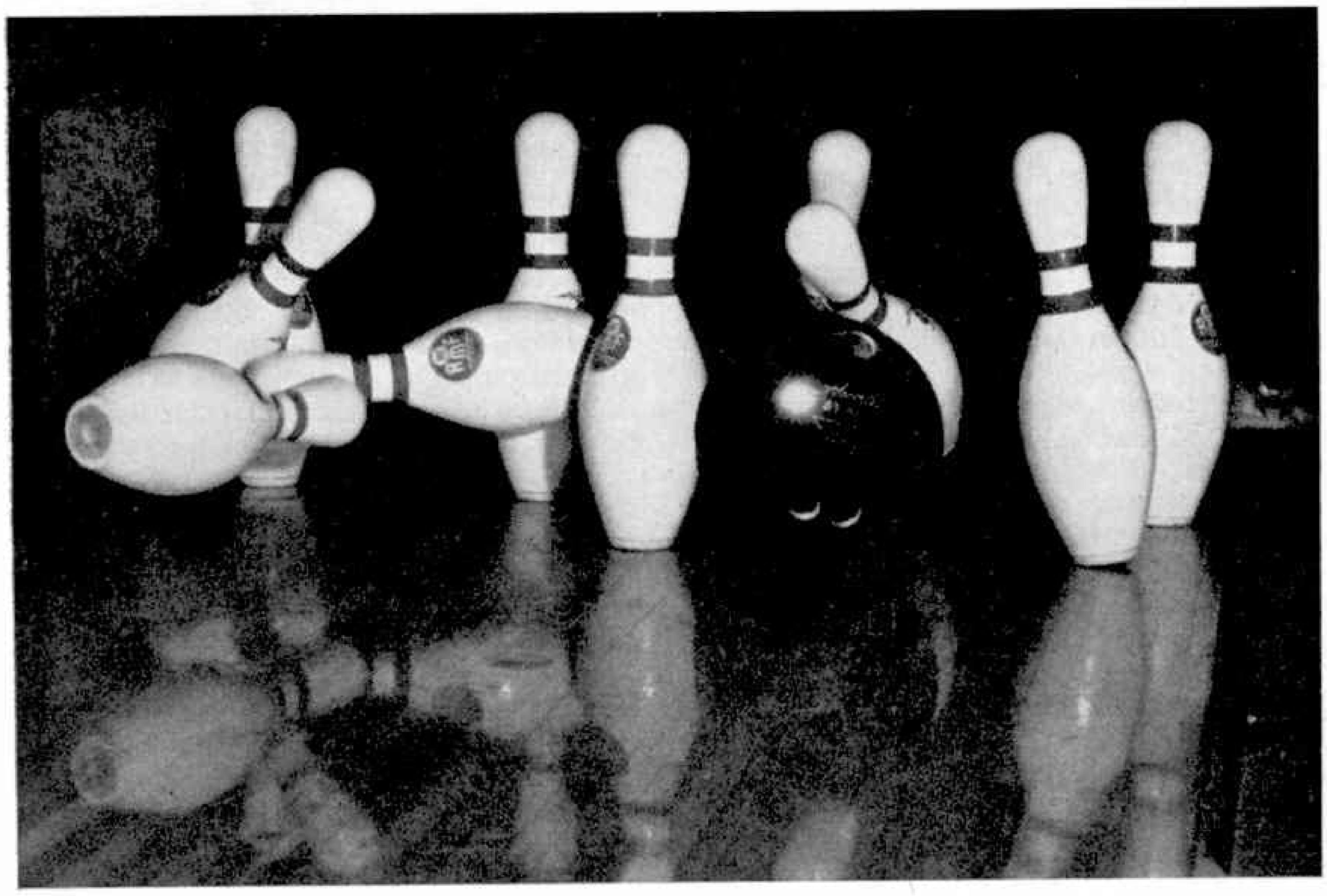
Televised bowling matches, of course, have done a great deal to make ten-pin bowling so popular in our streamlined, nuclear age and bring within sight the day when every school and factory will have its own alley. But bowling has a romantic history stretching back almost to the dawn of time. Perhaps the first evidence of the game produced in modern times was when Sir Flinders Petrie, the famous Egyptologist, unearthed a crude ball and pins from the tomb of an Egyptian child buried in 5,200 B.C.

Certainly during Caesar's time the Romans relaxed from exacting duties by playing bowls, and a modification of the game was enjoyed over much of Europe in early Christian times. It was not, however, until about 300 A.D. that the sport became popular and, of all things, a religious test. Pins to represent heathens were set up on the stone floor of the cathedral and worshippers were invited to roll balls at them. The person to knock down most of the "heathen pins" was acclaimed the most pious and became honoured in the eyes of the priests.



Doug. Lyons, AMF Chief Instructor, is seen here in action. All the illustrations appear by courtesy of AMF Limited.

The ball arrives at its destination, and skittles begin to topple.



Bowling spread to Britain from Holland and it became the sport of society people; indeed, so great was its popularity in this country that, in 1366, Edward III grew most concerned that it would inevitably result in poor archery—the nation's chief line of defence. Later, however, Henry VIII enabled the sport to flourish by building lanes in his London palace for the entertainment of his guests, and in so doing he set a fashion.

The real home of ten-pin bowling is America, but in fact it was the Dutch settlers who carried the game to the New World, and since then it has never looked back. In 1841, the Connecticut Legislature outlawed nine-pins—as the game was then known—because of gambling excesses and abuse, but a clever devotee put everything right by adding a further pin and calling the game ten-pins, as it is known today.

Gradually rules were laid down for competition and specifications were adopted for balls, pins and lanes, but a great problem arose in the shape of pin-setting. The pins, of course, were set by hand but were often not accurately set, so that games were delayed and bowling establishments could not accommodate all the people who wanted to bowl.

It was in 1937 that a man named Morehead Patterson put a multi-million dollar idea to work a machine to set up automatically the pins used in ten-pin bowling. This came to life about 1952 and was known as the AMF Automatic Pinspotter, used so widely in the sport today, making it completely standardised and more enjoyable.

How does this "machine at the end of the lane" work? Roughly, its function is three-fold: (a) to clear away all pins that have been knocked down by the first ball and replace in their positions those that are still standing; (b) after the second ball, to clear away all pins and put a fresh set of ten pins accurately on the spot—each cycle is initiated by the impact of the ball on the back plate; (c) the separation of the ball from the pins and its return to the bowler.

The actions are carried out in sequence by a series of switches: as soon as the ball hits the back plate, which is made of hickory with a rubber facing, a guard is lowered over the lane to prevent a second ball damaging the machine while in operation. Clamping jaws contact the heads of pins still standing and as the table rises, they are lifted clear as the guard sweeps backward all the fallen pins on to a conveyor which takes them to the pin elevator. An orienting device on the chute ensures that the pins all arrive at the table lower side first.

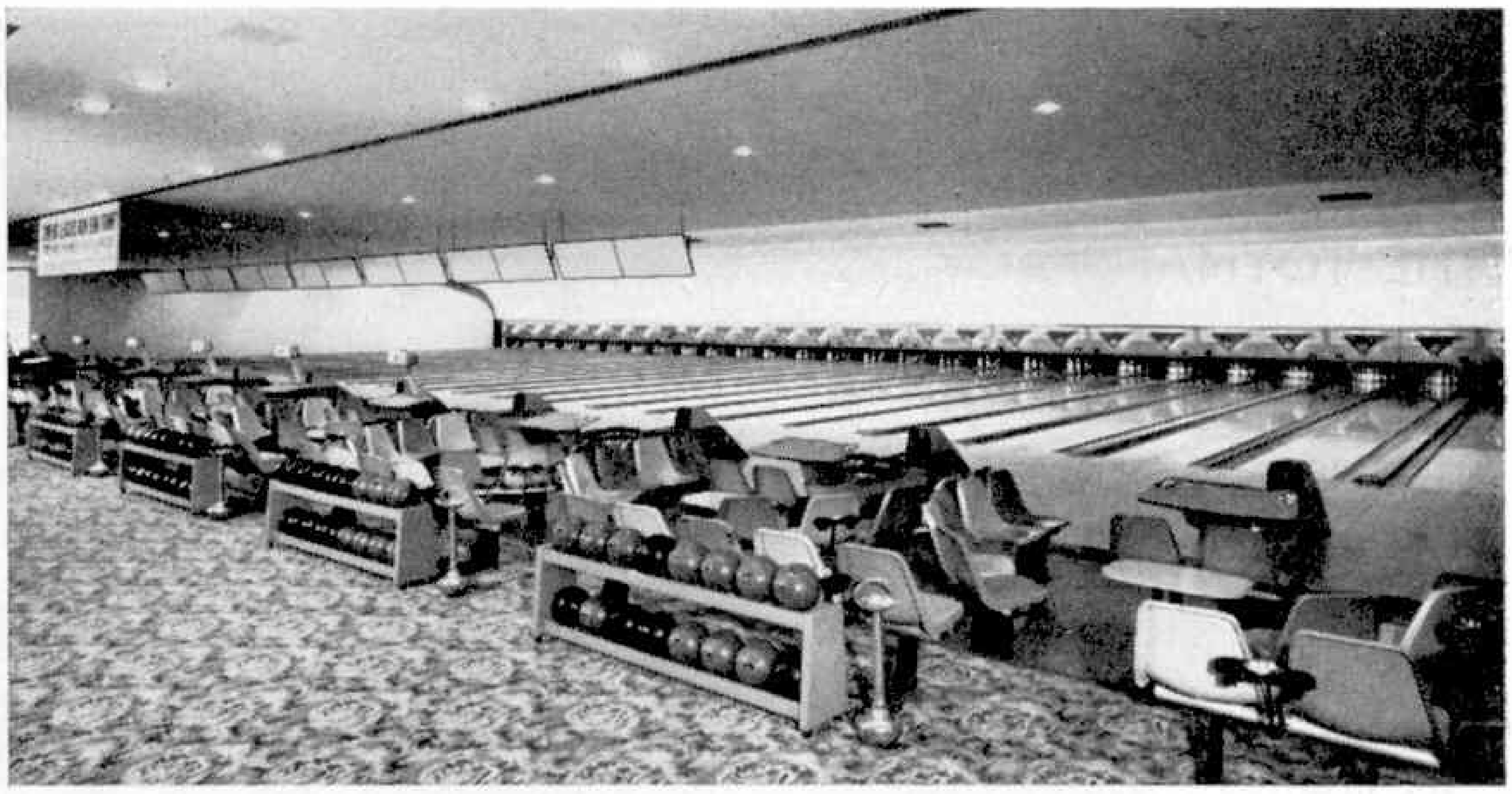
Usually the ball is returned by being received from the conveyor belt and raised by a vertical belt which presses it against the guide rails, ultimately delivering it down a covered chute to run along rails back to the bowling point.

Ten-pin bowling is played on a lane measuring 60 feet by 42 inches, made of hardwood, and level to 40/1,000 of an inch. The pins are also of hardwood and are set at the end of the lane—known as the "pin deck"—in triangular fashion with the apex facing the bowler. The ball (which may weigh between 10 lb. and 16 lb.) is made of solid hard rubber and has three finger holes to aid the bowler in directing it.

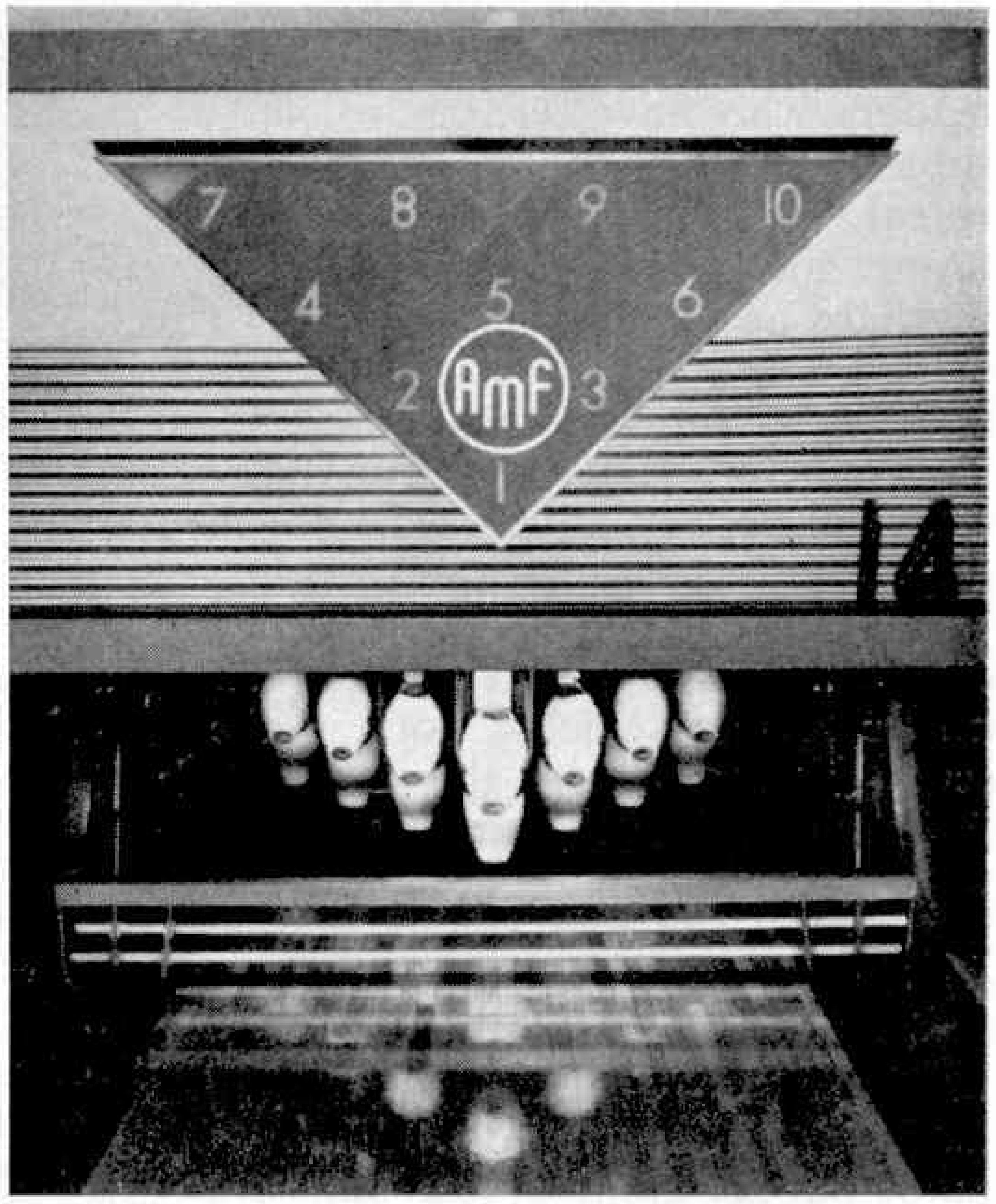
Each player's game is divided into ten "frames". Two balls are allowed for each frame, the object being to knock down as many pins as possible in each frame.

If all pins are knocked down on the first ball (a "strike"), the player does not roll another ball until his next frame; the number of pins knocked down on his next two rolls are added to the ten knocked down by his strike to determine the total for his first frame. Thus a high bonus is paid for the perfection of a strike.

If a player knocks down all pins in two rolls (a "spare"), the amount of pins he knocks down in his next roll (in the next frame, of course) is added to the ten to obtain the total for the frame. So a premium is also paid for a spare, although it is less than for a strike.



The interior of a ten-pin bowling alley at Stevenage.



A view of the AMF Automatic Pinspotter in action, showing the Magic Triangle pindicator. The first ball of the frame has been taken, and the table lowers to pick up the standing pins. A sweep removes the fallen skittles to the back of the machine where they are automatically lifted and fed back into the pin cups.

In the event of the player leaving pins standing after his two rolls of a frame, he scores only the amount of pins he has toppled (0 to 9). The total score is maintained progressively from frame to frame.

The maximum score for any one frame then is 30 (a strike followed by strikes in the next two frames). A perfect game would be 300, but this is rare and the score for the average individual centres more around 154.

Terrific suspense can be worked up in ten-pin bowling because a player, by rolling strikes in his last frames, is able to overcome a large point deficit quickly and overtake his opponent. It is, in fact, a scientifically captivating sport played regularly and seriously in an atmosphere of friendly competition.

Bowling did not always enjoy such popular esteem, however, for it is not many years since the bowling lane was considered to be on the seamy side of sports. Through the early 1930's bowling was relegated mainly to dingy basements in the hearts of towns. Then, through the efforts of far-sighted manufacturers and such women champions as Floretta McCutcheon, who travelled across America giving exhibitions, it came more and more into the sunlight of the esteem it deserved.

Ten-pin bowling is, of course, comparatively new to Britain so that, up to now, there are few outstanding personalities since the game has not been played long enough here in its present form. But there are "top names" among the AMF (American Machine and Foundry Company) instructors who have proved themselves competent to conduct bowling schools at AMF centres—Doug. Lyons, Paul Lane and Peggy Kent among many others. There is scope for everyone, and it may well be that among the players at some remote bowling centre is a budding British ten-pin bowling champion.

To encourage the sport, AMF give prizes under their own Achievement Award Scheme—a fully-automatic gold wrist watch for a bowler scoring 300 (the perfect game), gold cuff-links for a male scoring 299 or 298, a silver wrist watch for a lady, a handsome desk trophy, and various embroidered emblems for wear on bowling shirts to signify twenty different types of achievement.

(*Continued on page 533*)

DINKY TOYS NEWS

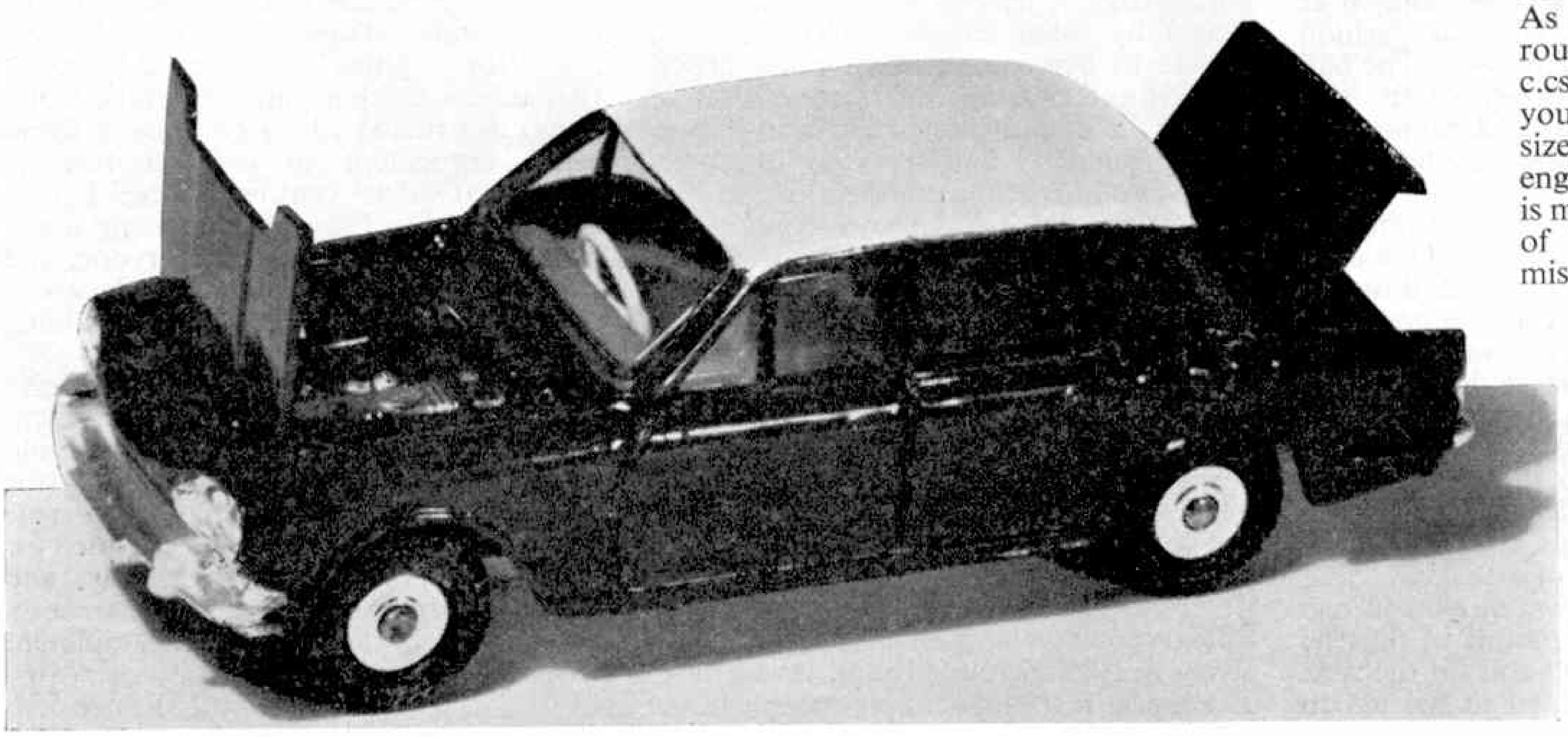
"THE TOYMAN" ADVISES . . .

Watch Out For These Models

THIS month is something of an event in the history of "Dinky Toys News" and, indeed, it may well be an event in the history of Dinky Toys in general. Those readers who have written to me on the subject will know that we do not normally reveal advance information about our future models. Just this once, however (perhaps as a Christmas present!) I feel I should give you some details of two really sensational Supertoys which will be on the market before very long. You may be sure they will be well advertised once they are available to our thousands of collectors.

From all over the world we have received requests to increase our range of public service vehicles, both in the small scale represented by the Leyland Atlantean and in the larger scale in which the Wayne School Bus is produced. The first results of the combined suggestions we have had is based on the Bedford Vega Major Luxury Coach, and it will be marketed as Supertoy No. 952. The model, in my opinion, is a "smasher", and I am sure you will agree with me once you see it. Before describing it, however, I would like to give you some details of the actual vehicle, which can be seen in one of the illustrations on the following page.

It is necessary to deal with the vehicle in two parts—chassis and body. The former, the Bedford VAL Passenger Chassis, is already famous throughout the transport world, having twin steering axles with power assistance from the driving position. There is also what is described as "direct mechanical actuation" as an extra safety feature. This means that the steering can still be operated if there is a failure in the power assistance system. Motive power is supplied by a 6-cylinder diesel engine of 400 cu. in. capacity, which develops 125 b.h.p. at 2,600 r.p.m. As a guide, 400 cu. in. is roughly equivalent to 6,554 c.cs—over 6½ litres—so you can judge from this the size and power of the engine, which, incidentally, is mounted at the front end of the chassis. Transmission to the rear wheels



You will not see much of the real Triumph 2000 before January next year, but the Dinky Toys version (seen left, in close-up) is now available. Top picture: The Hillman Imp, Dinky Toys No. 138. It has an opening bonnet and a boot which also opens to reveal a detailed engine.

Retaliatory rocket! An action shot of the Honest John Missile being fired down-range at one of the Government's secret missile testing grounds.

is via a five-speed and reverse gearbox, with overdrive on top gear and synchromesh on the top four gears.

The Vega Major's coachwork is produced by Duple Motor Bodies Ltd., who have works in various parts of the country. The keynote throughout is passenger comfort, 52 well-designed and deeply-cushioned seats being installed. Enormous windows and roof lights give excellent all-round visibility which, after all, is essential in vehicles used mainly for scenic tours and coach trips.

My own opinion is that the Vega Major will soon be one of the most popular coaches on our roads. In fact, it is well on its way to being so now, and I think also that our Supertoy replica will keep pace with its popularity for, in addition to the usual Dinky features—windows, seats, suspension, etc.—there are three "firsts" for Dinky Supertoys. These, I am afraid, *must* remain a secret until a little later on, but without question they will mark another step forward in the march of Dinky Toys.

I must pass on, now, to the other new model in the offing, the Honest John Missile Launcher, Dinky Supertoys No. 665. This, again, is the result of continuous demands, this time for an addition to our Army series, and it makes a fitting companion for the Corporal Missile Unit. The real-life counterpart is a nuclear tactical missile, developed by America but also used to equip British Forces, particularly those stationed in Germany. Range is anything up to twelve miles and it will destroy with deadly accuracy any target within that distance.

The Supertoy replica can be called a "working" model—the high-impact polystyrene missile is spring-actuated and you will be able to shoot it from the launching vehicle in a most realistic manner. It will be fitted with a soft rubber nose-cone so that there will be no need to worry about any damage being caused. The actual launching platform will be capable of being raised, lowered and traversed through approximately 20 degrees so that the missile can command a fairly large area without the transporting

(*Continued on page 534*)

The Vega Major Luxury Coach. Details of this vehicle are given in this month's notes, together with advance news of a Dinky Supertoys replica.

AIR NEWS

By John W. R. Taylor

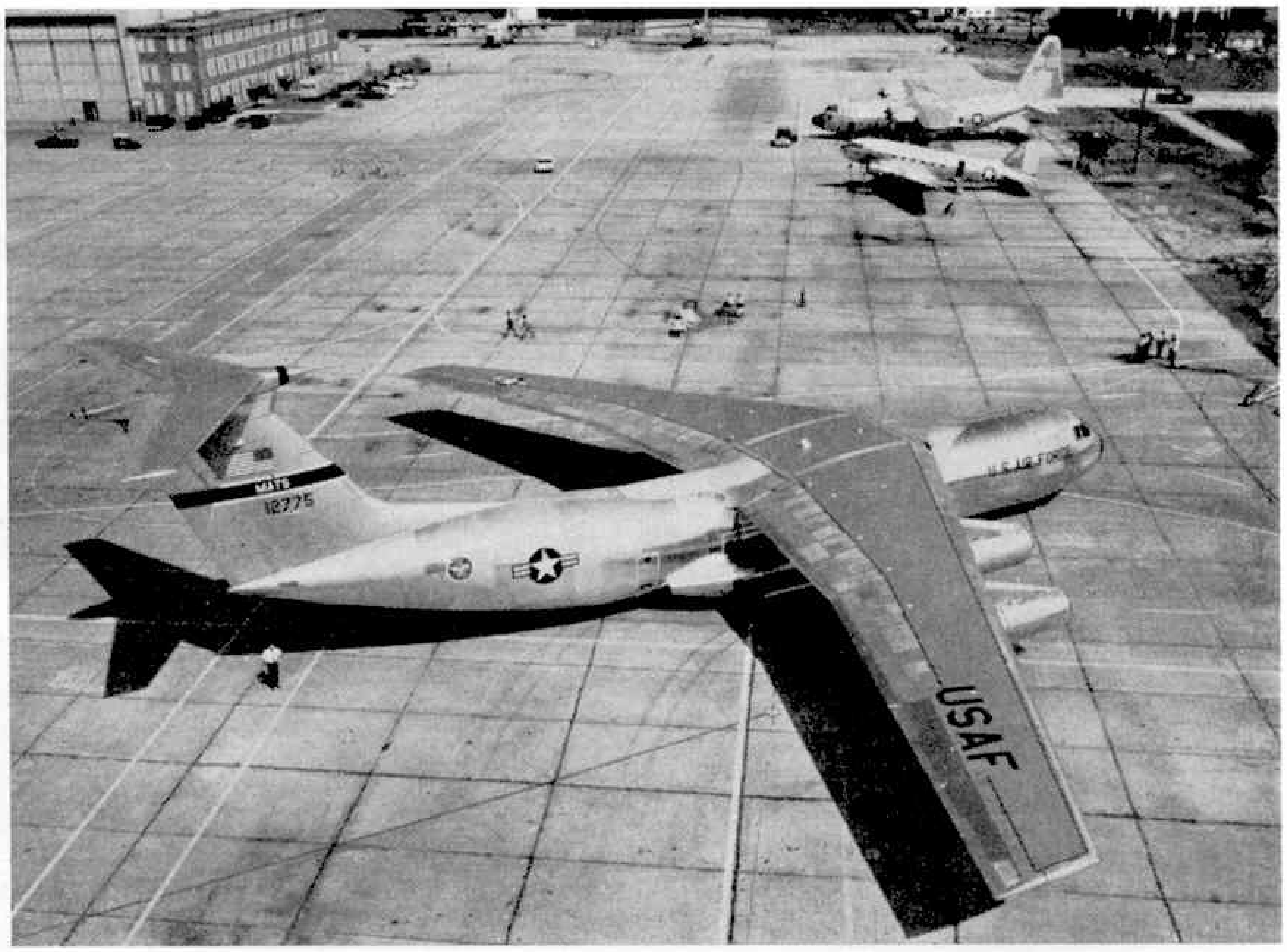
V.I.P. TREATMENT FOR THE STARLIFTER

President Opened Hangar Doors By Remote Control

FEW aeroplanes are so important that the President of the United States is willing to open the hangar doors personally so that they can be towed outside. Lockheed's new C–141A StarLifter is one of the exceptions. When the first C–141A was completed at Marietta, Georgia, on August 22, there was no need for President Kennedy to travel all the way from Washington to give the doors a push. He simply pressed a golden key in the White House and this passed an electronic signal to Marietta, where the hangar doors slowly lifted and the aircraft emerged.

By any standards the StarLifter is remarkable. It is bigger and heavier than a Boeing 707 or DC–8, with a wing span of 160 feet, length of 145 feet, and take-off weight of 316,600 lb. Its freight hold is 81 ft. long, 10 ft. 3 in. wide and 9 ft. 1 in. high, and it has a rear loading ramp so that vehicles can be driven straight inside through clam-shell doors which form the underside of its rear fuselage in flight.

There is room for 154 fully-equipped combat troops, 80 stretcher patients and eight attendants, or nearly 35 tons of cargo; yet the StarLifter will be able to operate with a full load from runways only 6,000 feet long. Four huge 21,000 lb. thrust Pratt & Whitney TF33–P–7 turbofan engines will enable it to haul a full payload over the Atlantic at more than 500 m.p.h. Maximum cruising speed is 550 m.p.h., making it the fastest cargo-plane in the world.



Spreading its huge wings over the concrete apron at the works of the Lockheed-Georgia Company, Marietta, Georgia, the new C–141A StarLifter dwarfs a C–47 "Gooney Bird" and a C–130 Hercules parked nearby. The C–141A can airlift twice as much as the Hercules and twelve times as much as the C–47.

Since August, Lockheed have been busy getting the StarLifter ready for its first flight, which should take place sometime this month. Already the U.S.A.F. has ordered 131 more, and this may be only the start, for a commercial version is to be offered for airline use, with a maximum payload of nearly 43 tons.

Perhaps the most incredible part of the whole story is that Lockheed took only 28½ months to build the first StarLifter from the day they were given the go-ahead. They now hope to have the aircraft in full squadron service by mid-1965.

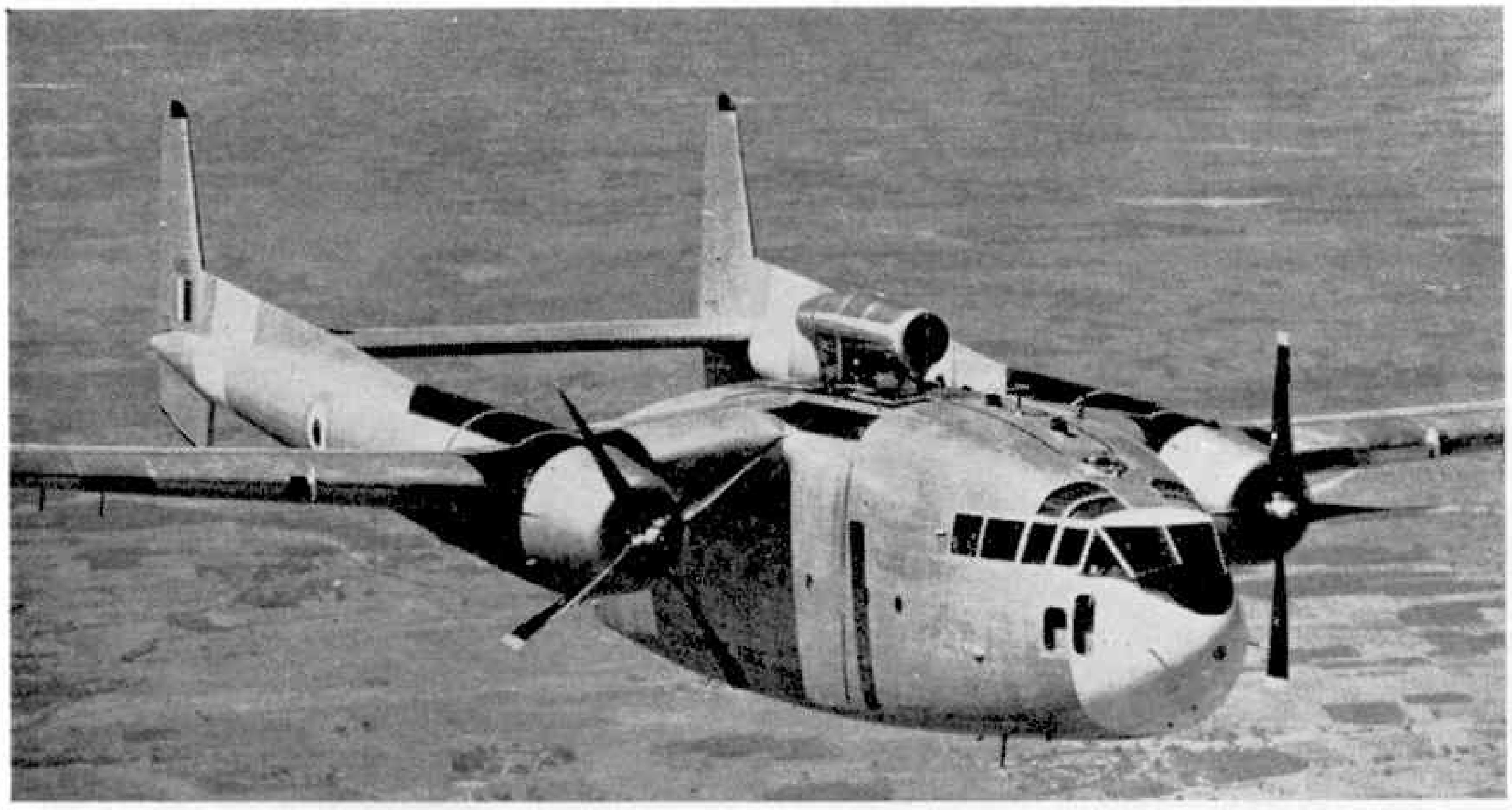
FUN FOR ONE

Going from one extreme to the other, the second illustration on this page shows one of the world's smallest aircraft, the Beagle-Wallis WA.116 autogyro, in its latest form with a neatly faired cockpit. This not only improves the appearance of the machine, but will make the pilot feel less out in the open when flying several thousand feet above the ground.

Even when there is no wind, the WA.116 autogyro, seen above, can land in a distance of under 45 feet, at a speed of only eight miles an hour.

The aircraft shown, XR 942, is one of three WA.116s which have been evaluated by the Army as potential flying motor-cycles and light observation aircraft. They have much to offer in this role, being able to fly at up to 75 m.p.h. carrying a load greater than their own empty weight of 258 lb. Even when there is no wind, the WA.116 can take off in under 90 feet and land in under 45 feet at a nice safe 8 m.p.h. It is powered by a 72 h.p. Enfield McCulloch four-cylinder two-stroke engine, driving a two-blade pusher propeller. The rotor is, of course, unpowered in flight, but can be spun up by the engine on the ground to shorten the take-off run.

Unfortunately, until the WA.116 can be



The props of this Indian Air Force C–119G are stationary, although the aircraft is in flight. The answer is in the small pod mounted above the fuselage in the form of a 4,700 lb. thrust Bristol Siddeley Orpheus jet.

built in enormous numbers, with a low-cost power plant, it will be beyond the reach of most of us. Beagle cannot quote a price yet, but it will probably be about the same as a Jaguar motor car.

400-M.P.H. RACING CARS

When B.O.A.C. operated the first transatlantic service with their newly-acquired Canadair Forty-Four swing-tail freighter on September 30, the payload included no fewer than nineteen of the world's finest and fastest racing cars on their way to compete in the U.S. Grand Prix. All of British manufacture, the cars consisted of Lolas, Lotuses, Coopers and the two B.R.M.s of Graham Hill and Richie Ginther, who finished first and second in the race.

STILL THE MOSTEST

Like the brook in Tennyson's well-known poem, it seems as if the old DC–3 Dakota airliner is able to plod along humming to itself "men may come and men may go, but I go on for ever".

It is now 28 years since the first DC–3 went into airline service, yet one out of every four commercial transport aircraft flying in the world is still a DC–3 according to the International Air Transport Association.

Because of the large size of the Forty-Four's cabin, it was possible to stow the cars side by side in two rows running the full length of the hold, with a third row on a steel-strip platform above them.

The Forty-Four has been leased by B.O.A.C. from Seaboard World Airlines and is being operated three times weekly between London and Manchester and Montreal and New York. Return flights from New York to London provide coverage of Philadelphia, Boston and Prestwick.

FOR MILLIONAIRES ONLY

Although air freighting is becoming more popular every day, it seems that some things must continue to travel the slow way, by surface transport, unless the owner is a millionaire.

Recently, a customer wrote to B.O.A.C. to ask how much it would cost to fly some urgently-needed turf to Aden for a civil engineering project. At the standard rates, it would have cost the shipper £3,937,500 for the 5,000 tons he wished to have despatched. And, even at the rate of ten tons a day, the job would have taken about a year and a half to complete.

LOOK, NO PROPS!

Something unpleasant seems about to happen to the Indian Air Force C–119G Flying Boxcar transport shown in the top illustration on this page, because both its propellers have stopped turning. Yet, we are told, it continued to fly along quite happily at a height of 4,000 feet, carrying a heavy load in its cabin.

The answer is contained in the small pod mounted above the Boxcar's fuselage, in the form of a 4,700 lb. thrust Bristol Siddeley Orpheus turbojet. This has been fitted to the aircraft experimentally by Hindustan Aircraft Ltd., of Bangalore, with the object of increasing the Boxcar's load-carrying capability and general performance during operations from high-altitude airfields and under high-temperature conditions.

Tests from airfields in the mountainous China–India border country proved highly satisfactory and it was found that the Boxcar would maintain height on the power of the Orpheus alone at low altitudes, with the two standard 3,500 h.p. Wright R–3350–85 piston-engines switched off.

As Hindustan Aircraft are manufacturing the Orpheus to power the Gnat fighters they are building under licence, it is possible that the Indian Air Force may decide to have all its Flying Boxcars fitted with Orpheus "booster pods" in this way.

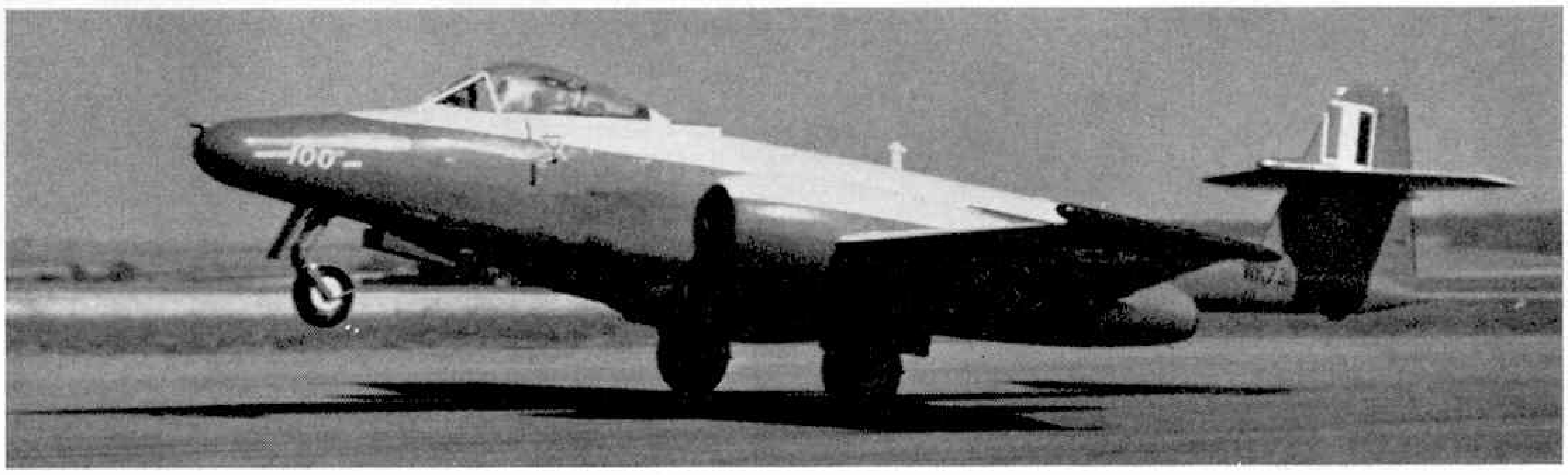
ODD LOAD SPECIALISTS

The time-honoured phrase "everything but the kitchen sink" sums up well the transport duties performed by the Belvedere twin-rotor helicopters of No. 26 Squadron during its first few months at R.A.F. Khormaksar, Aden.

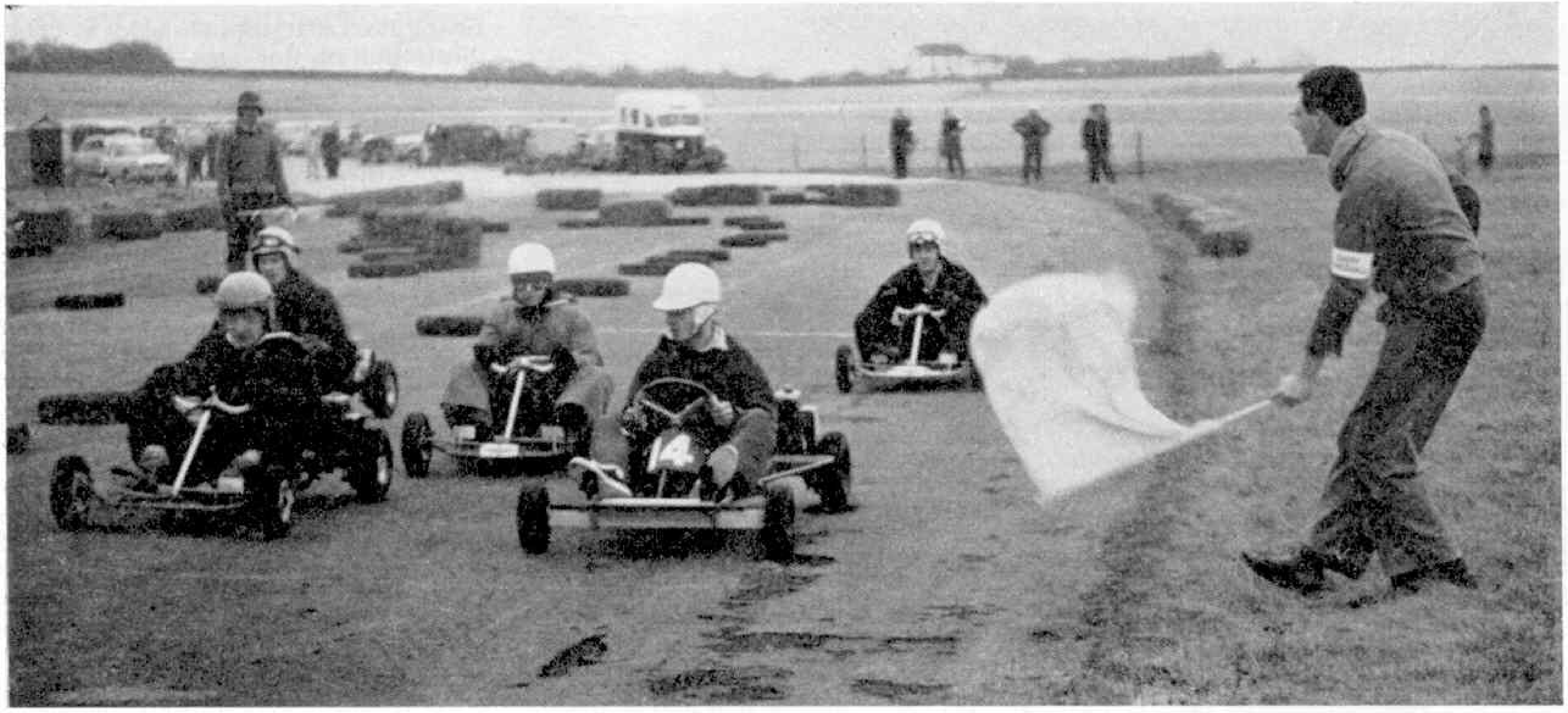
Among odd loads carried by the unit have been a kitchen stove, road rollers, vehicles and an Auster aircraft. Operation kitchen stove was a little tricky, as the stove had to be lowered to a radio station on a rocky hill top and the target area was a clearing only about six feet square.

Visitors to the squadron are now greeted by an "advertisement" displayed prominently under the unit's springbok's head badge. It reads: "26 Squadron Rentachopper Service. Let us handle your transport problems. We are the Aden specialists for odd load lifting. Twenty-four hour service. Distance no object. Our crews are trained to look after your comfort. Why not try our de luxe casualty-evacuation service? Soft drink service—passenger lounge. Remember the

(*Continued on page 534*)



Built to be shot at is the drone Meteor seen here. It is the hundredth target conversion of a Mk.8 fighter.



ALL THE THRILLS OF

KARTING

Top picture: Down goes the flag! The start of a Class I race. Below: In the pits. Tinkering with a 197 c.c. Villiers engine on a Class IV "Fastakart". All the illustrations are by the author.

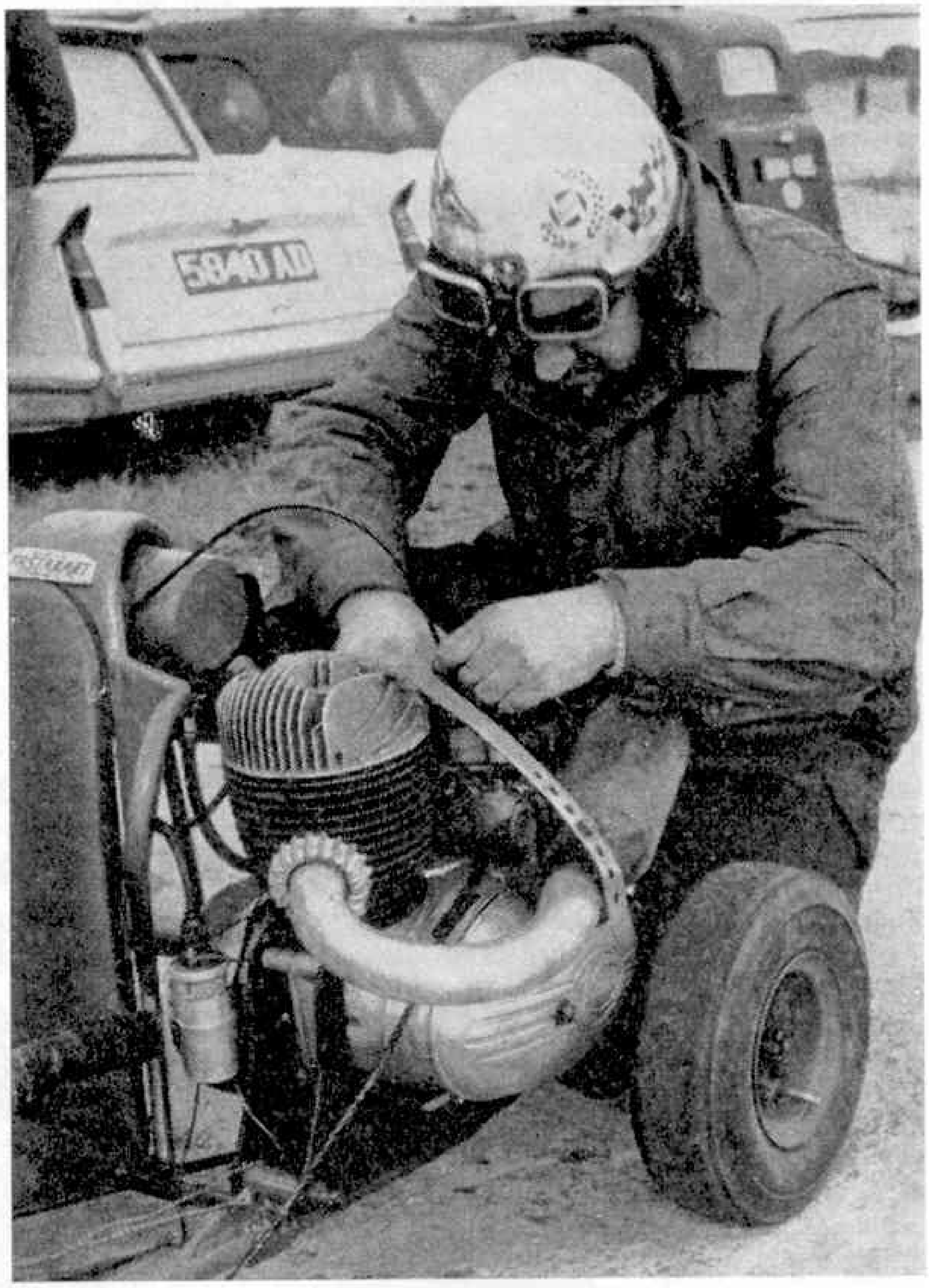
MOTOR-RACING is one of the most thrilling sports known to man, but it is also far too expensive for most people. Now, however, the thrills and excitement are available to all in the form of Karting. At first sight Karts look little more than children's pedal cars with engines added, but this is far from true. These little machines are capable of speeds of up to 60 m.p.h., with accelerations equivalent to a racing car. Such performance when the driver is less than six inches from the ground with no sides or roof to protect him gives an unbelievable sensation of speed.

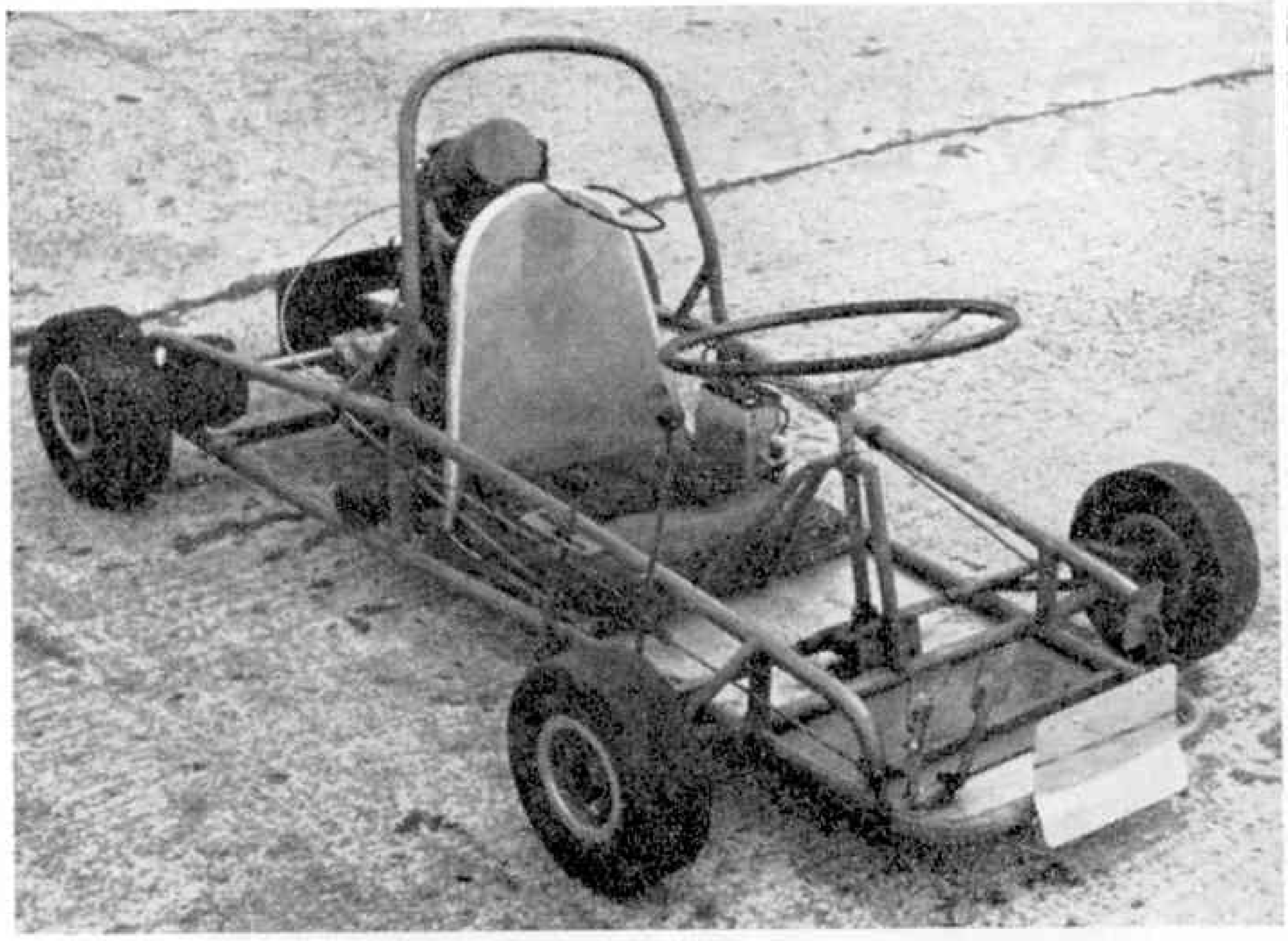
By EDWARD G. HODGKINS

Here, in fact, is a branch of motor sport in which organised race meetings are held regularly throughout the country under the control of the Royal Automobile Club, with very strict safety regulations. The fact that crash helmets must be worn at all times shows how seriously this sport is taken, but this must not be misleading. Because of their very low suspension and their relative width, these are extremely safe machines, almost incapable of overturning. They are so safe that children as young as twelve years of age are permitted to drive by some clubs, and ladies' races are frequently organised.

A Kart basically consists of a very low tubular chassis with a seat mounted in the centre. The front wheels are fully steerable by means of a normal steering wheel, while the rear wheels are driven by a powerful engine mounted behind the seat. There is generally no differential in the back axle, as most corners are taken by skidding sideways in any case.

Two main classes of Kart are in popular use. A Class I machine carries an "industrial engine" up to 100 c.c. capacity without gears or clutch. These have to be push-started and must be fully controlled by brake and accelerator. An "industrial engine" is the term given to lawn-mower or power-saw engines, etc. The more potent Class IV Karts are powered by motor cycle engines up to 200 c.c. with gears and clutch. These are the Karts which, when tuned, achieve the higher speeds. All Karts are fitted with pneumatic tyres and the usual type of shoe-braking. Apart from a small fuel tank and seat cushions there is absolutely nothing else.





The illustration on the left shows a home-made Class IV Kart. The tyres fitted to this model are treadless "slics". In the picture above, the driver of a Class IV "Fastakart" is seen cornering in the wet.

No mudguards, lights, body or instruments are added, as all of these would naturally increase the weight and hence reduce the performance.

The tyres often have no tread and are then termed "slics". These are made from very tough rubber and enable the machine to accelerate hard on the straight as well as sliding easily through corners. It is not unusual for a set of tyres to be worn completely through in a single race-meeting but, provided nothing unforeseen happens, the tyres and fuel are the only running expenses at a race.

Race-meetings are organised in exactly the same way as the full-size meetings, and are generally held on disused aerodromes. A Clerk-of-the-Course supervises the events with the help of a starter, time-keepers and marshals. Starting and chequered finishing flags are identical to those used at motor races. The track is marked out with straw bales and old car tyres, which are ideal for the job, being heavy enough not to move far if struck but not hard enough to cause damage. The circuit is generally around 440 yards long and races consist of 10, 15 and 20 laps. Lap timing is accurately checked and prizes are awarded for the fastest lap of the meeting in each class as well as to the winners. Races are run in both main classes for men, ladies and, occasionally, for children.

As many different races as possible are crammed into a meeting, including Heats for the Grand Final, where the ten or so fastest Class IV Karts are lined up on the starting grid and everyone stands back as they are flagged away. With a roar and a cloud of blue smoke they leap away from the grid to slide through the first corner in a bunch. The slightest touch of wheels or a marker tyre is enough to cause one or more competitors to spin off the track, so thrills are frequent. The Final is usually the most exciting race of the day for competitors and onlookers alike. Only the most experienced drivers will have qualified to take part, and a terrific race is guaranteed. The machines barely slow down for the corners but instead squeal round them flat-out in order to maintain the highest possible speeds. Overtaking is usually only possible on the straights, and two machines approaching a corner together are certain to cause some excitement. It is this kind of treatment that tears the tyres to shreds and is likely to cause engine seizures, but it is all in the game.

One ride on a Kart is enough to fire the enthusiasm of any budding race-driver, and only the possession of a Kart will satisfy him. Second-hand machines are easily obtainable from £20, while for the more serious Karter new Class IV Karts may cost over £150. Many people build their own models but this entails a certain amount of welding, while a set of wheels and an engine must still be bought, making the cost about the same as that of a second-hand machine. For transport to race meetings, Karts may be tied into the boot of a car or onto a roof-rack, but a van or a trailer provide the best means of conveyance.

Since this sport was introduced into Britain from America four years ago, its popularity has increased enormously. It is well within the means of anyone who can afford to run a car, and is guaranteed to provide many an exciting weekend.

The Royal Automobile Club issue special regulations for Karters at a cost of half a crown, and probably they will be only too pleased to provide the address of your nearest club on request. Failing this, there are several Karting periodicals available which publish all the racing and Club news as well as informative articles on building and tuning.

There are many thrills to be obtained from Karting. Here a competitor is seen at speed.

MECCANO-BUILT RADAR TOWER

EVER since it was invented during the last war, the importance and use of radar has increased tremendously until, today, radar aerials are a very common sight indeed. Here we have a novel replica of the familiar "dish" and its mounting which performs all the movements of a prototype. A handle in the mounting turns the "dish" through 360 deg. in the horizontal plane whilst another handle turns it through 180 deg. in the vertical plane so that, with careful manipulation of both handles, the aerial can be trained on any point above the ground in any direction.

By

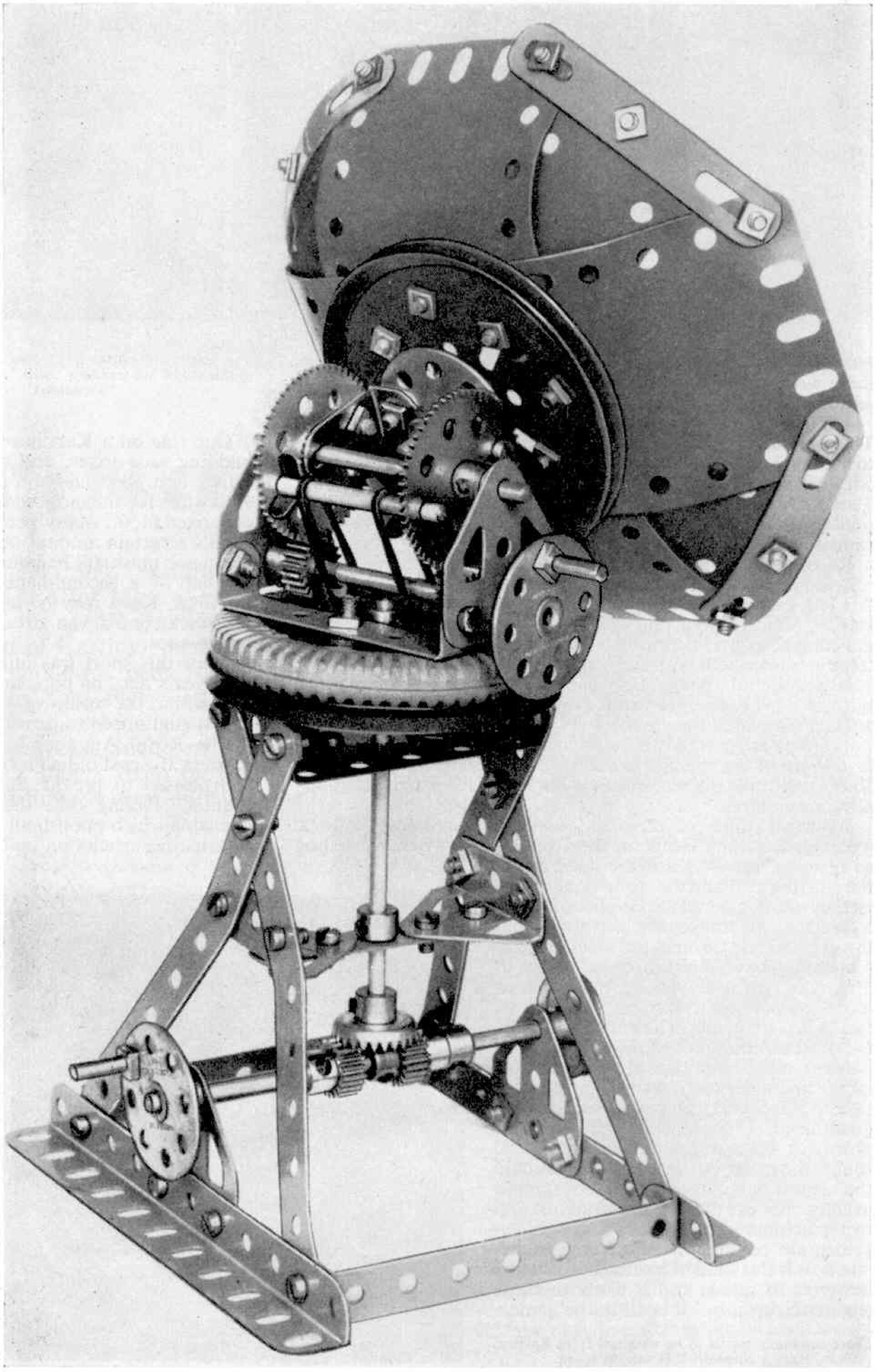
SPANNER

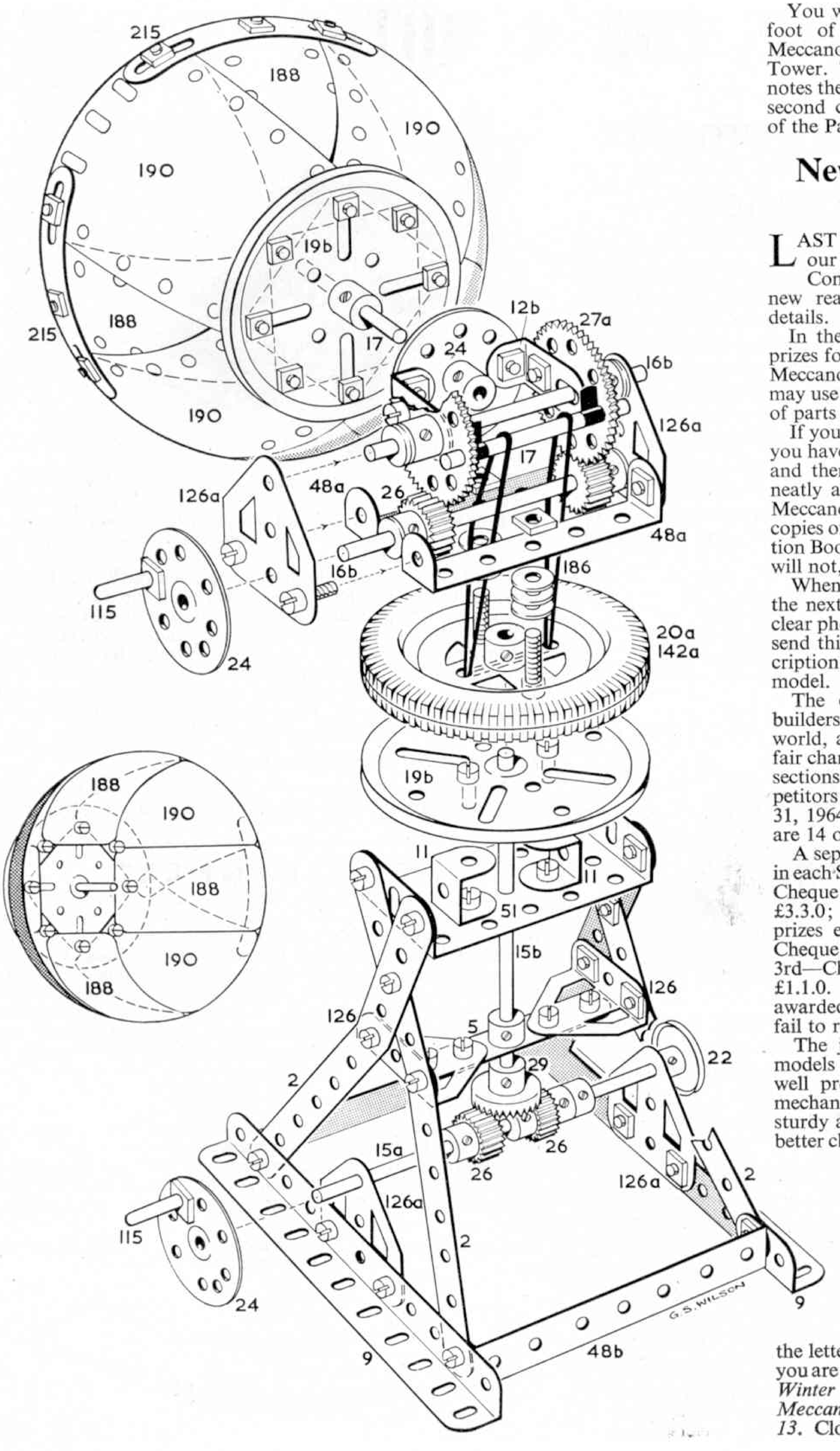
The model is illustrated in a similar manner to those in the current Instruction Manuals, except that black is used throughout, instead of the Manuals' two-colour scheme of red and black; and no written text is necessary.

Although the small diagrammatical illustration of the "dish" does not show the use of Washers beneath the boltheads, since this is really an optional matter, my own suggestion is that Washers are advisable whenever bolts pass through elongated holes. They not only protect the slotted holes in the Plates, but also help to keep the Plates flat against the 3″ Pulley.

PARTS LIST

4—2
1—5
2—9
2—11
2—12b
1—15a
1—15b
2—16b
2—17
2—19b
1—20a
1—22
3—24
4—26
2—27a
1—29
2—35
56—37a
54—37b
32—38
2—48a
2—48b
1—51
3—59
2—111a
2—115
2—126
4—126a
1—142a
1—186
4—188
4—190
4—215





You will have noticed the panel at the foot of the previous page listing the Meccano Parts required to build the Radar Tower. The figure in the first column denotes the quantity required and that in the second column is the catalogue number of the Part.

New Model-Building Competition

LAST month we announced the first of our series of Winter Model-Building Competitions, and for the benefit of new readers we repeat here the main details.

In these contests we are offering cash prizes for the most original and best-built Meccano models of any kind. Competitors may use any size of Outfit or any quantity of parts in building them.

If you wish to enter this competition all you have to do is to think of a new model and then set to work to construct it as neatly and realistically as possible, from Meccano Parts. Models that are merely copies of those shown in Meccano Instruction Books or other Meccano publications will not, of course, be eligible.

When you have completed your model, the next thing is to obtain either a good clear photograph or good sketch of it, and send this to us together with a short description of the main features of your model. *The actual model must not be sent.*

The competition is open to model-builders of all ages living anywhere in the world, and in order that everyone has a fair chance entries will be divided into two sections A and B. Section A is for competitors under 14 years of age on January 31, 1964, and Section B is for those who are 14 or older on that date.

A separate set of prizes will be awarded in each Section as follows: Section A: 1st—Cheque for £5.5.0; 2nd—Cheque for £3.3.0; 3rd—Cheque for £2.2.0. Ten prizes each of 10/6d. Section B: 1st—Cheque £7.7.0; 2nd—Cheque for £5.5.0; 3rd—Cheque for £3.3.0; Ten prizes of £1.1.0. Certificates of Merit will be awarded in Section A to those who just fail to reach prize-winning standard.

The judges will award the prizes for models that are most original in subject, well proportioned and built on correct mechanical principles. A small, well built, sturdy and original model will have a far better chance than a large and complicated structure that is rickety in construction and poor in design, and which does not show much originality in its subject. It will help you on the way to success if you choose a model that "works".

Before posting your entry, be sure to write your name, address and age on the backs of the photograph or drawings, together with the letter A or B indicating which Section you are entering. Address your envelope to *Winter Model-Building Competition No. 1, Meccano Limited, Binns Road, Liverpool 13.* Closing date: January 31, 1964.

MECHANISMS FOR A MOTOR CHASSIS

Useful Arrangements In Meccano

JUDGING from the correspondence we receive at Meccano—and my own experience verifies this—one of the most popular models built with our constructional Outfits is the detailed motor vehicle chassis. This does not mean the basic girder framework, which is comparatively easy to construct, but all the intricate working mechanisms incorporated in a chassis. Mechanisms such as gear-boxes, differentials, brakes, steering gear, etc. are the sort of things I have in mind and genuine working replicas of all of these can be produced in Meccano. Indeed, many examples have appeared in past issues of the *M.M.*, but they have all been isolated cases. Here, therefore, I present a number of useful arrangements, each of which can be used in a motor chassis. Space this month will allow the inclusion of only four of the seven I wish to describe, but I will complete the set in next month's Magazine.

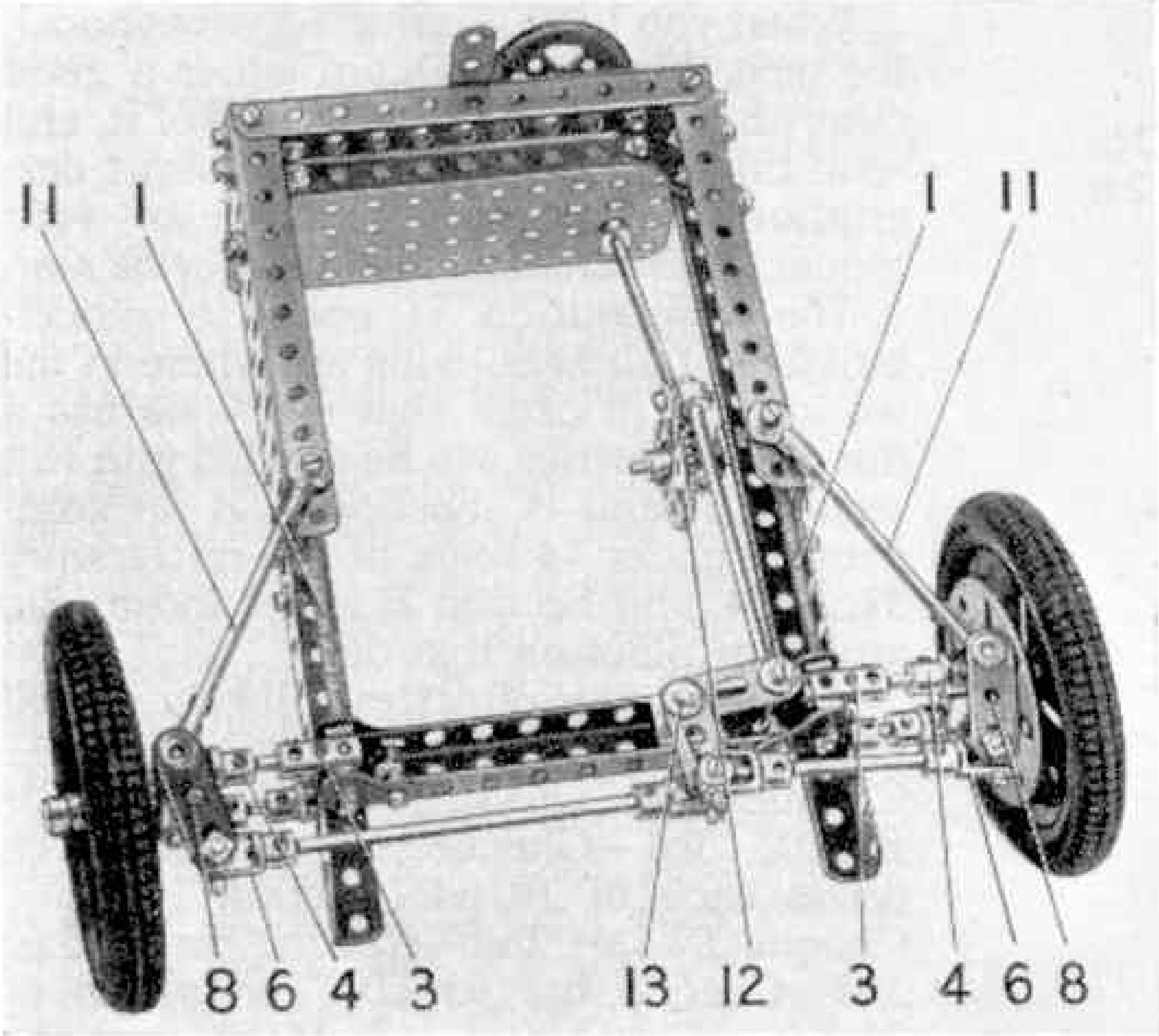


Fig. 2. The torsion bar suspension, viewed from beneath.

STEERING AND INDEPENDENT SUSPENSION

Figures 1 and 2 on this page show a steering gear with independent or torsion bar suspension, originally designed by Mr. W. Johnstone of Liverpool. An 8″ Screwed Rod 1 is fixed firmly to the chassis by two Threaded Bosses 2 which are attached to the chassis by bolts spaced by Washers. The nuts must be tight enough to prevent the Screwed Rod from turning.

The opposite end of the Screwed Rod is mounted in two 1″ Corner Brackets, and carries a Coupling 3. The Coupling is also fixed on the Screwed Rod by nuts, and it carries a 1″ Rod fitted with a Swivel Bearing 4. A second 1″ Rod fixed in a Coupling 5 is free to turn in the "spider" of the Swivel Bearing, and is fitted with a Crank 8. The Coupling 5 carries also a further 1″ Rod that is free to turn in the "spider" of a Swivel Bearing 9.

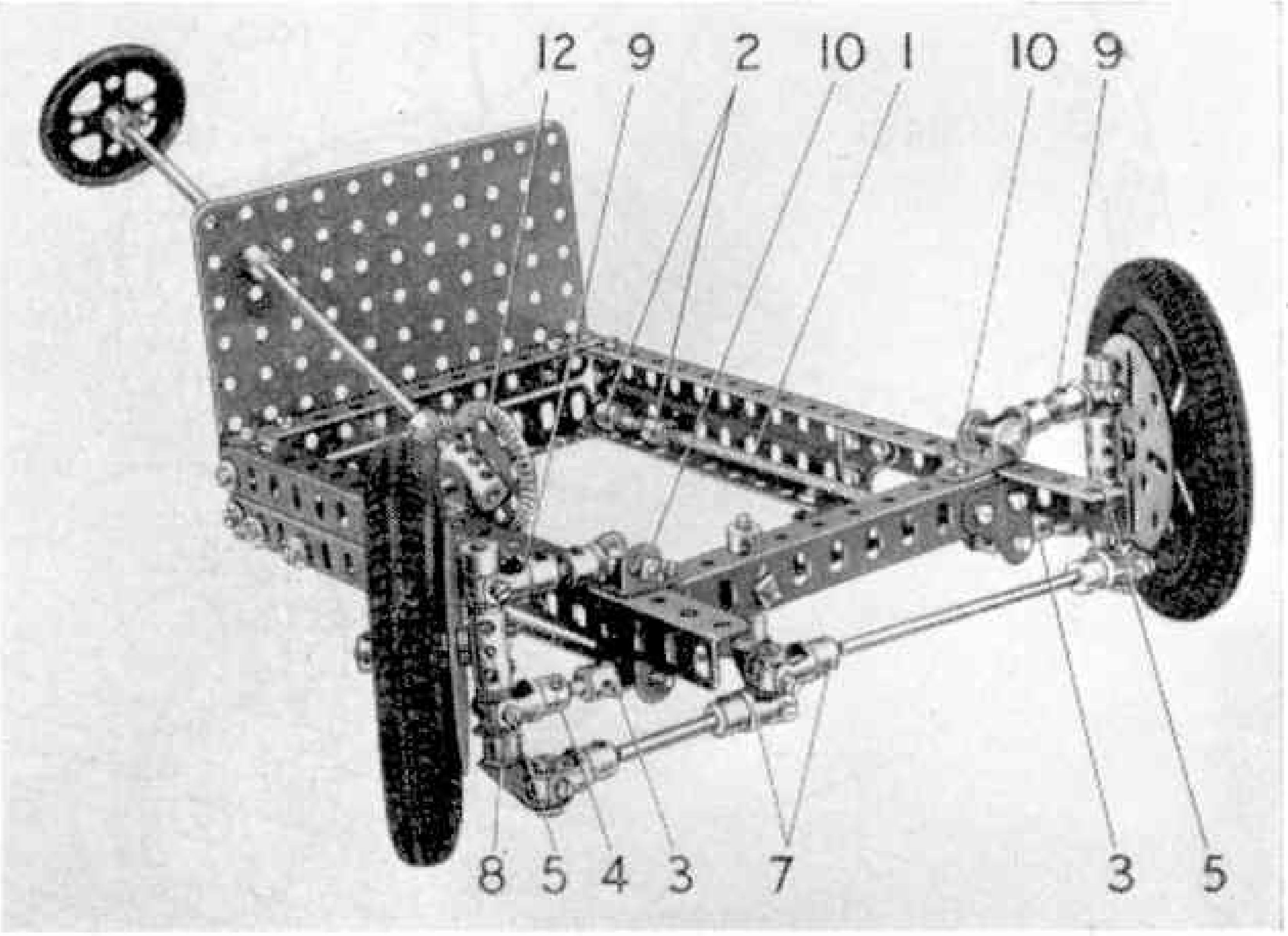


Fig. 1. An independent suspension unit, working on the torsion bar system, which includes an effective steering arrangement.

The Rod is held in position by a Collar, and the Swivel Bearing is connected by a 1″ Rod and a Small Fork Piece to a Double Bracket 10. The stub axles are 1½″ Rods fixed in the Coupling 5 and the links on each side are braced by radius rods 11.

Movement of the road wheels is controlled by a drop arm consisting of a Fishplate bolted to a 1½″ Bevel Gear 12. The Fishplate is connected by a Rod and Collars to one arm of a Bell Crank with boss 13. The other arm is linked to the Cranks 8 by Rods and Swivel Bearings 6 and 7.

LEAF-SPRING SUSPENSION

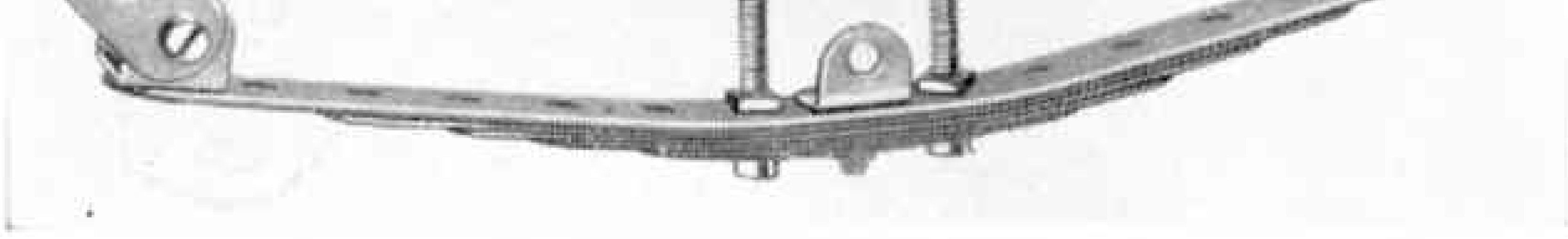
Many vehicles equipped with independent front suspension have ordinary leaf-spring suspension at the rear. Figure 3 gives a useful example of the latter which, in this case, is a Semi-elliptic and Helper Spring. Construction is evident from the illustration, the Angle Bracket in the centre forming one bearing for the rear axle. The bearing can, of course, be modified to suit the rear axle being employed. It is obvious, for example, that a rear axle-casing of the type seen in Figure 4 would not make use of the Angle Bracket but would be affixed to the spring by different means.

By "SPANNER"

DIFFERENTIAL

The rear axle illustrated includes a compact but very efficient differential. Each half of the axle-casing consists of two 1½″ × ½″ Double Angle Strips bolted between a Wheel Disc and a Bush Wheel. A 2½″ Strip 1 is bolted across each Wheel Disc and they are connected by 1½″ × ½″ Double Angle Strips. The left-hand

Fig. 3. This leaf spring suspension unit is composed of a basic leaf arrangement, strengthened by a small "helper" spring.



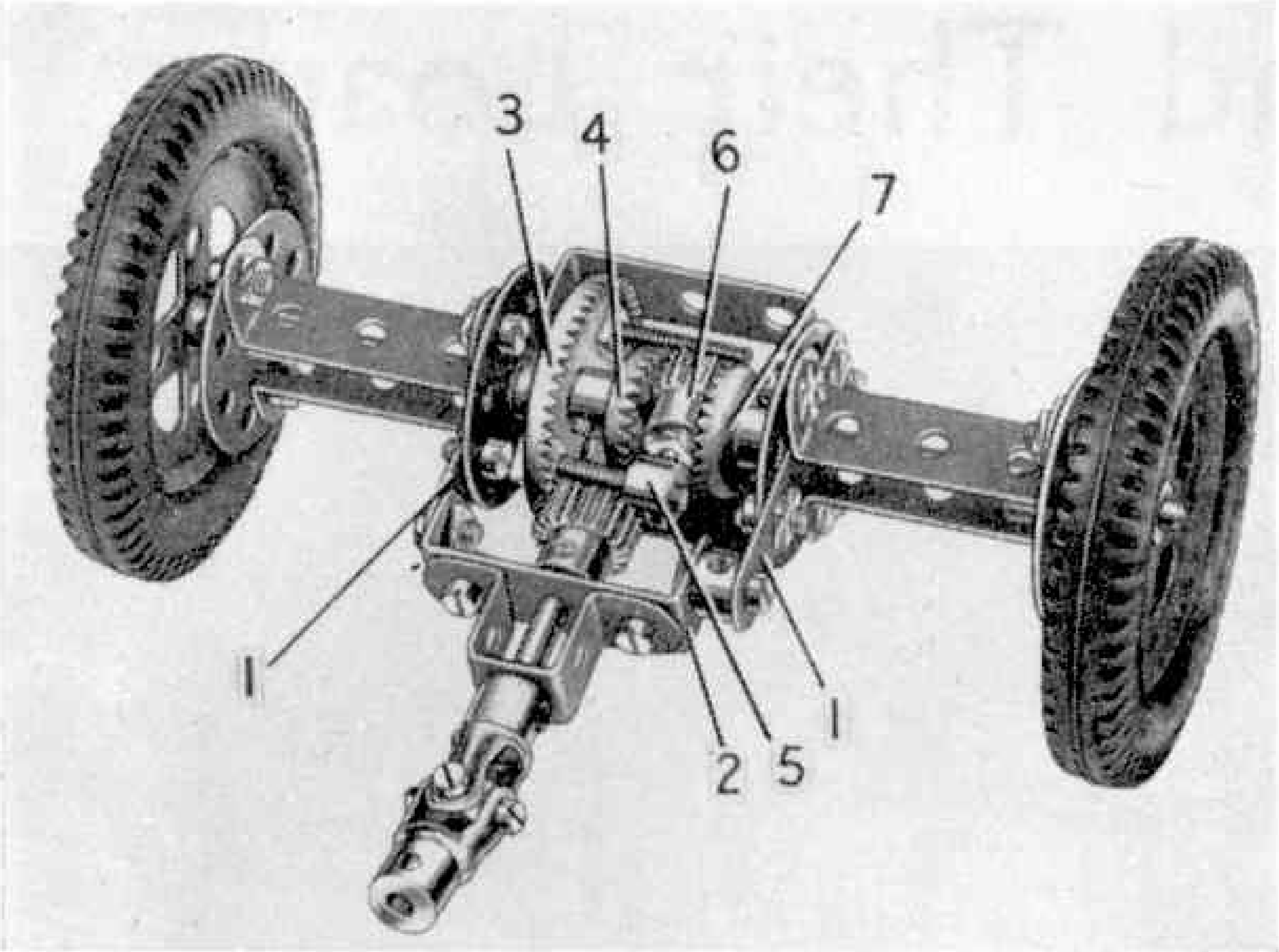


Fig. 4. A sturdy rear-axle incorporating a compact differential drive that makes use of Contrate Wheels and Pinions.

Disc is spaced from these Double Angle Strips by two Washers on each bolt. Another 1½″ × ½″ Double Angle Strip 2, fitted with a Double Bent Strip, is fixed between Strips 1, but is spaced from one of them by a Collar on a ⅜″ Bolt. The left-hand axle is passed through the casing and carries a 1½″ Contrate 3 and a ¾″ Contrate 4. Two 1″ Screwed Rods are held in the Contrate 3 by nuts and a Collar 5 is fixed on one of them. A Threaded Pin is screwed tightly into this Collar. The Contrate 3 is free on the axle, but Contrate 4 is fixed in place and meshes with a $\frac{7}{16}$″ diam. Pinion 6. This Pinion is loosely mounted on the Threaded Pin and is retained on it by the second Screwed Rod. A ¾″ Contrate 7 is fixed on the right-hand axle, and a ½″ Pinion on the driving shaft is meshed with Contrate 3.

The driving shaft is mounted in the Double Angle Strip 2 and in the Double Bent Strip, and should be connected to the gear-box output shaft.

A FIRST-CLASS GEAR-BOX

What motor chassis would be complete without a working gear-box? The one shown in Figures 5 and 6 was designed a number of years ago by N. Gottlob of Hjortekaer, Denmark and incorporates three forward and one reverse gear. The mounting is a Face Plate 19 supporting a 3½″ Screwed Rod 17 on which a nut is positioned about ½″ from one end. A Washer is placed next to the nut, and the Screwed Rod is passed through one of the slotted holes in the Face Plate. Six Washers and a 1½″ Double Angle Strip 13 are then placed on the Screwed Rod, and two Fishplates are bolted to the Double Angle Strip so that they project as little as possible beyond its ends. Two Washers are placed on the Screwed Rod, and a "spider" 25 from a Swivel Bearing serves as a nut to lock the assembly together. The centre bore of the "spider" must be exactly in line with the holes in the lugs of the Double Angle Strip. The Screwed Rod is fixed as near as possible to the centre of the Face Plate to provide bearings for the layshafts.

The bearing member of the other end of the mechanism consists of a Double Arm Crank 15, two 1½″ Strips and two Fishplates arranged as shown. The assembly is attached by nuts to the Screwed Rod 17 and a 3½″ Screwed Rod 18.

The input shaft is a 2½″ Rod mounted in the boss of the Face Plate. It carries a Pinion 26 from a No. 1 Clockwork Motor, and a ½″ Pinion arranged about ¾″ from the Face Plate. The input shaft extends only half way into the bore of the ½″ Pinion, and the other half of the bore supports the inner end of the output shaft 4, which is a 2½″ Rod. The output shaft carries a ½″ Pinion placed next to the ½″ Pinion on the input shaft, a ¾″ Pinion and two Washers.

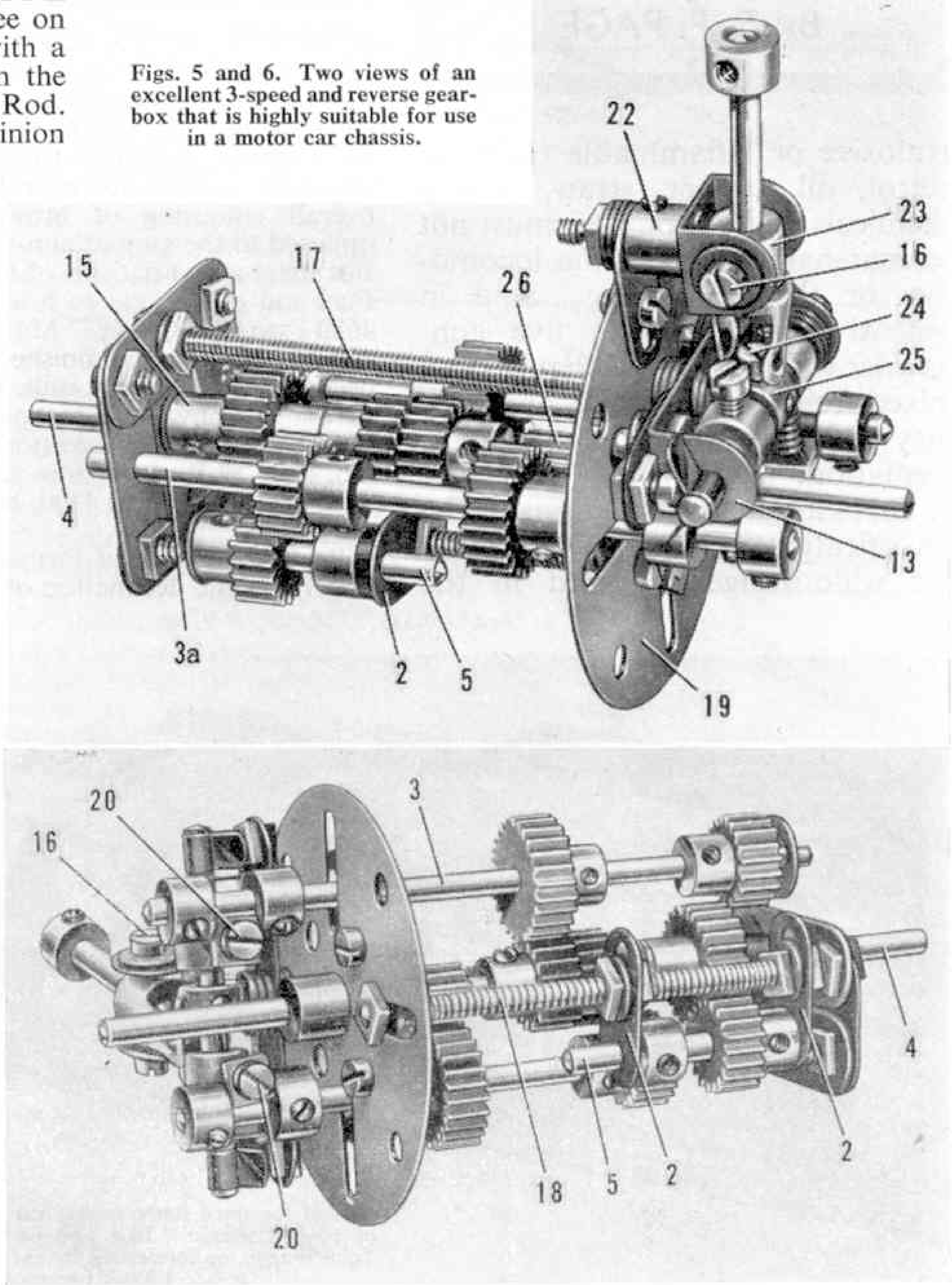
A 4″ Rod 3 carrying a Collar, a ¾″ Pinion and a ½″ Pinion are arranged as shown. This Rod when moved to the left (Fig. 6) engages second gear, and when it is moved to the right, top gear is obtained. The 4″ Rod 3a carries a ¾″ Pinion and a ½″ Pinion as shown, and when it is moved to the right (Fig. 5) first gear is engaged.

A reverse ½″ Pinion is fixed on a 1½″ Rod 5, which is supported in two Fishplates 2 fixed between nuts on Rod 18. The angle of the Fishplates is adjusted so that the Pinion on Rod 5 can be meshed with both the ¾″ Pinion on the output shaft and the ½″ Pinion on Rod 3a.

Rods 3 and 3a are each fitted with two Collars arranged so that a nut on a Bolt 20 engages between them. *Two Washers are placed between the inner Collar and the Face Plate*. The Bolts 20 are fixed by nuts in Collars mounted on 1″ Rods supported in the lugs of Double Angle Strip 13 and in the "spider" 25. Spring Clips are placed on the ends of the 1″ Rods, and are prevented from turning by bolts fixed in the Fishplates attached to Double Angle Strip 13. The two Collars are fixed on the 1″ Rods by ordinary bolts and the "spider" 25 is fitted with one of the special bolts from a Swivel Bearing. The special bolt must not grip the 1″ Rods.

The gear change lever is a Rod held in a Small Fork Piece 23, which pivots on Set Screws 16 passed through a Large Fork Piece 22. The Large Fork Piece pivots on a Threaded Pin passed through a Fishplate bolted to the Face Plate.

This, then concludes the first four mechanisms. Next month I will give details of a heavy duty clutch, a disc brake, and a very useful twin rear-axle drive unit, so try not to miss the January 1964 issue of the *Meccano Magazine*.



Figs. 5 and 6. Two views of an excellent 3-speed and reverse gear-box that is highly suitable for use in a motor car chassis.

Freight Trains And Their Loads

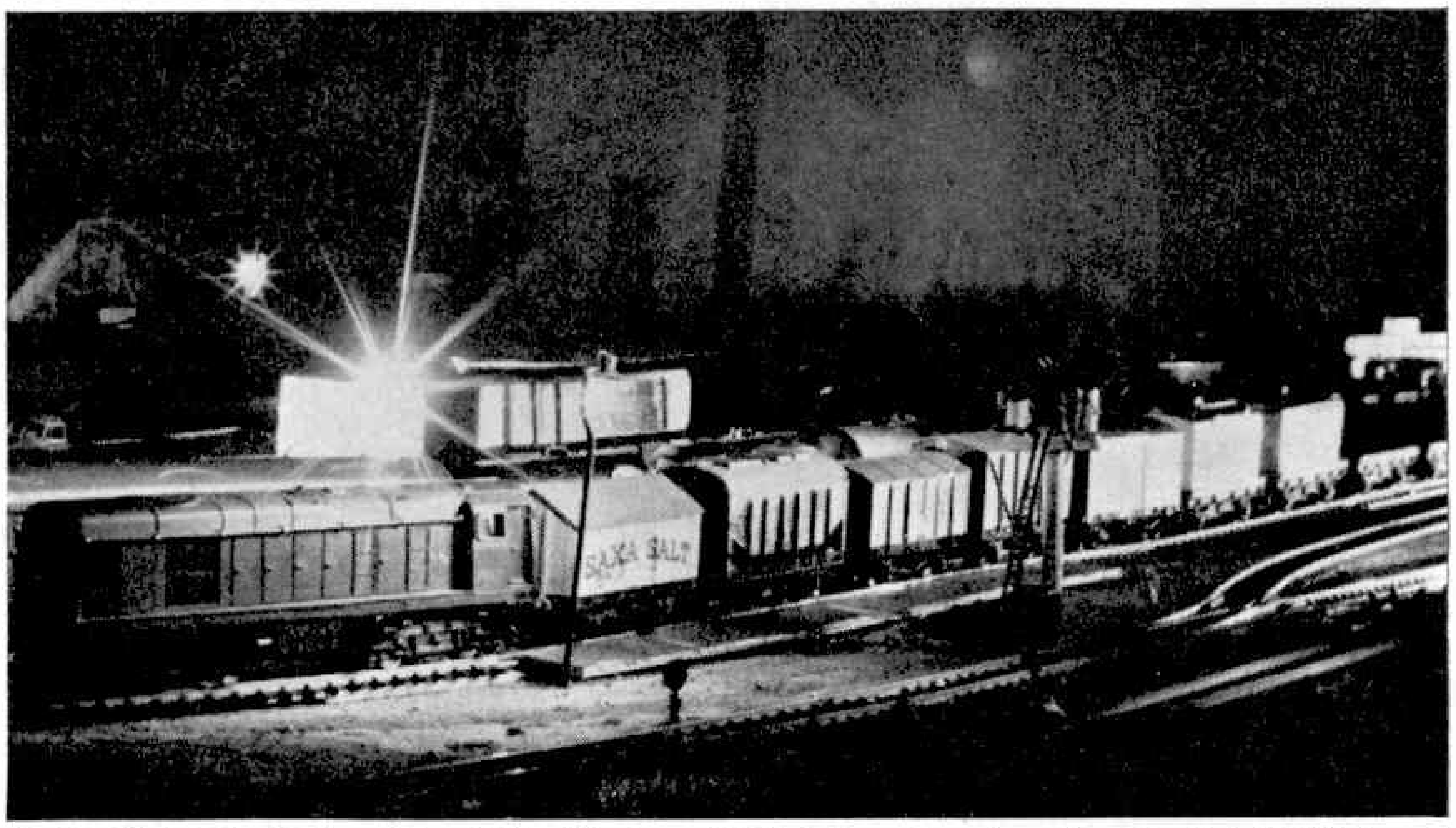
MINIATURE TRAIN FORMATIONS

By S. F. PAGE

OF all miniature train formations the most universal are freight trains, which, while by no means as orderly as passenger trains, are not without correct sequence. This is of importance to the railway layout operation. On full-size railways a freight train varies in length from 60 or so wagons for main line work down to one wagon and a brake van on country branch lines.

First, a brake van must be provided as the last vehicle in practically every instance. Next, such explosive or inflammable traffic as petrol, oil, timber, straw, certain chemicals and gunpowder must not be marshalled next to the locomotive or the brake van. And in general no more than five gunpowder wagons must be hauled in a mixed freight at one time, and then they must be in the middle of a formation.

There are many variations in the classification of freight stock and the wide range provided in the Hornby-Dublo series will produce practically every type of freight train required.



A mixed freight headed by a Type I Diesel hauls a night freight southwards on the author's L.N.E.R. layout.

Many real wagons are fitted with vacuum brakes, which makes possible the running of express freight, and such standard wagons are identified by their overall colouring of brown oxide, as opposed to the grey of non-fitted wagons. But there are variations of fitted wagons. Fuel and oil tankers such as the Hornby 4680 Esso Fuel Oil, 4677 Mobil, 4678 Shell and 4676 Esso are all finished in their respective colours, while milk tankers such as the Hornby 4657 are painted white. Then we have the refrigerator vans such as No. 4320 W.R. 6-ton Van and the "Blue Spot" Fish Van No. 4300, both of which are fitted vehicles.

While freight train formations depend largely on the destination of the vehicles, it is important that as many fitted wagons as possible shall be marshalled next to the engine (except the special loads mentioned earlier) in order to provide the maximum braking power behind the locomotive.

Bearing these facts in mind let us marshal one or two freight trains behind suitable locomotives. For instance: Van 4325, Van 4325, Mineral 4656, Van 4325, Mineral 4656, Low-sided 4648, Low-sided 4648 and, of course, one of the fitted Brake Vans, 4310 or 4311. This forms a fully-fitted train to travel at express speeds.

Here are other examples: Van 4325, Refrigerator Van 4320, Refrigerator Van 4320, Low-sided 4648, "*Lowmac*" 4652, Open 4670, Open 4670. This forms a partially-fitted train, since the last wagons are not fitted.

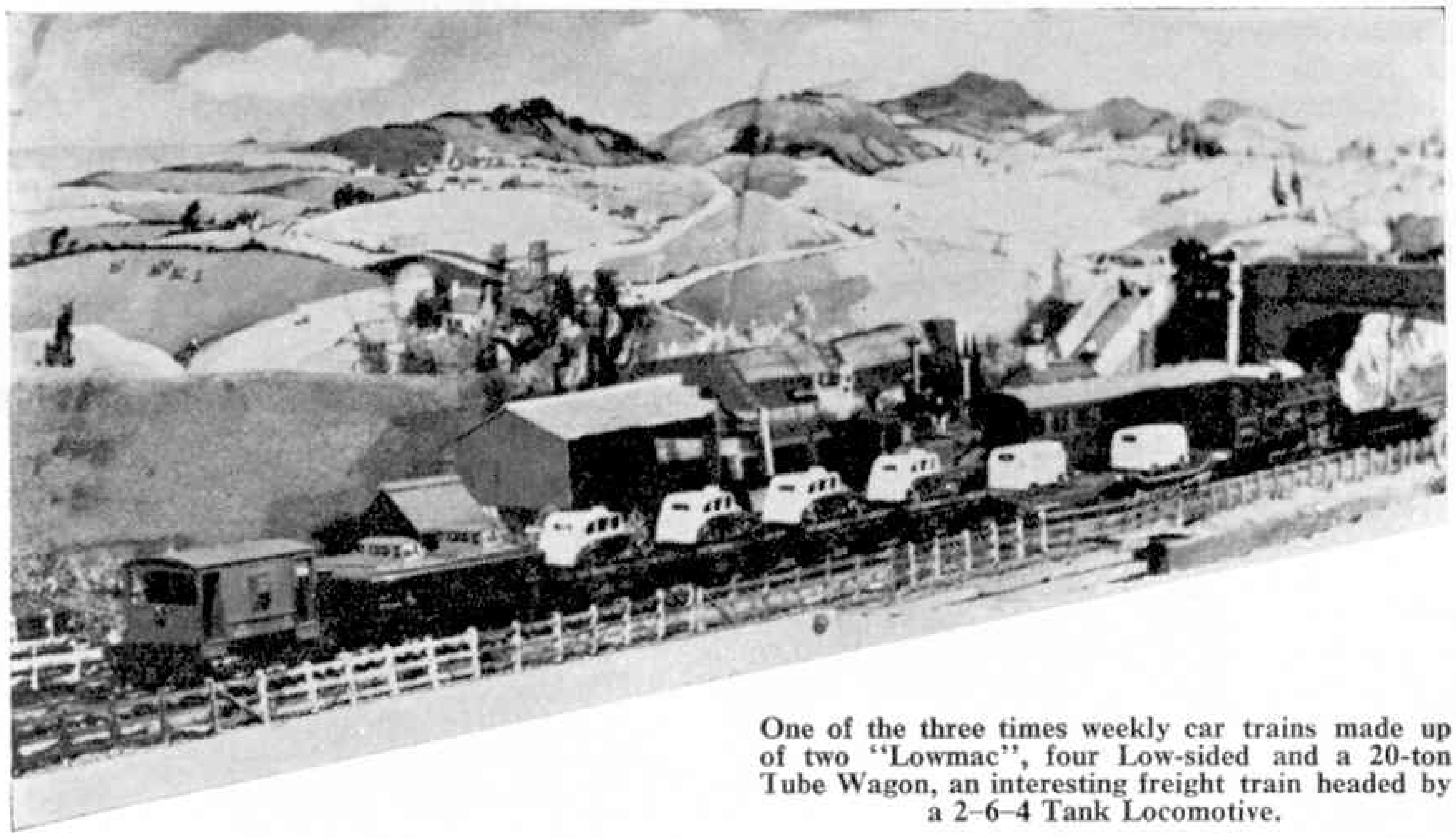
Slower freights can be made up by: Cattle 4630, Open 4670, Tanker 4676, Van 4325, Mineral 4655, Mineral 4655, Mineral 4655. Such a formation is common for local freight and branch line operation.

In recent years the practice of "block" freight formations has developed, and for this type of freight working Hornby-Dublo stock is particularly well suited.

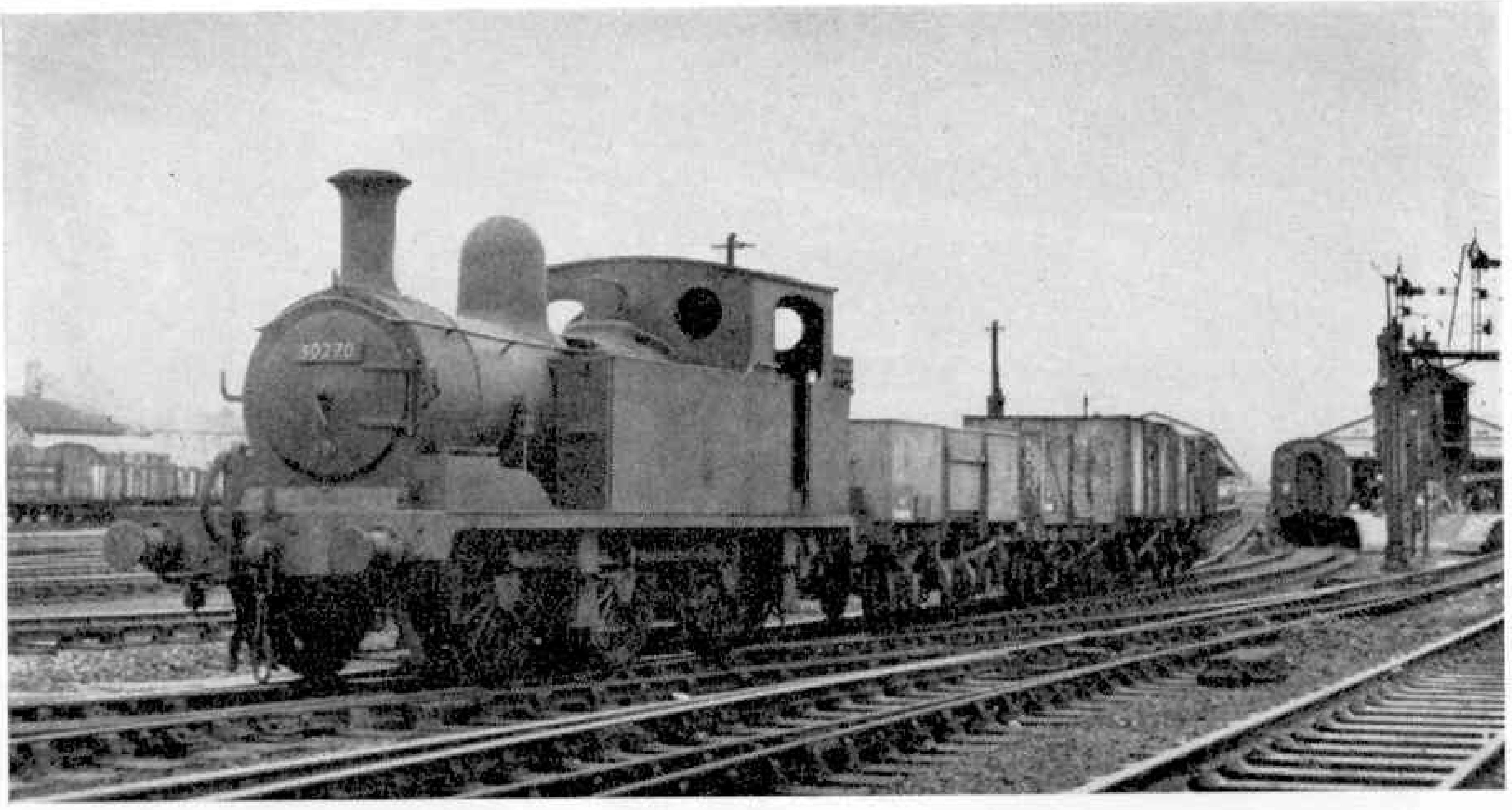
Such stock as the 20-ton "Presflo" No. 4626, the 20-ton I.C.I. Bulk Salt Wagon No. 4627, the I.C.I. bogie tanker, No. 4685 and the individual block trains of the fuel oil tankers mentioned earlier provide the layout with a wide range of block train stock.

To relate such block trains to actual working, there is the Class "C" Thames Haven to Rugby Mobil Oil train, running nightly. Such a train can be formed by several No. 4677 Mobil tankers, separated in the middle by a brake van. This is positioned at the end of the section to be

(*Continued on page 534*)



One of the three times weekly car trains made up of two "Lowmac", four Low-sided and a 20-ton Tube Wagon, an interesting freight train headed by a 2-6-4 Tank Locomotive.



FOR THE TWO-RAIL ENTHUSIAST

ELEMENTARY SHUNTING

By

"LINESMAN"

THIS Christmas, many of you will begin a Hornby-Dublo railway, and many others will extend layouts already in existence, so this seems an opportune moment to have a talk about one of the numerous fascinating aspects of miniature railway operation, the shunting and marshalling of trains.

I am sure all of you will have seen shunting and similar operations of various kinds taking place on real railways. Although a great deal of shunting and marshalling takes place in large yards specially laid down for the purpose, several modern examples of which were mentioned in *Railway Notes* last month, the kind of shunting with which most of us are familiar consists of the less involved operations that can take place in almost any local goods yard.

These operations usually involve various movements into and out of the sidings in the yard, so that the operations are carried out in as few moves as possible. In the course of such working the order of the vehicles composing the train frequently changes, and the movements that may be required at a later stopping point have to be borne in mind while the job is going on.

It is possible to reproduce operations of this kind in Hornby-Dublo, and plenty of fun is to be had even with a comparatively simple yard layout. An example is shown in the series of diagrams on this page, the purpose of which is to indicate the progression of various wagons which are being re-arranged from their original mixed order into correct alphabetical sequence. I should point out that the track in the diagrams does not represent the individual Hornby-Dublo components needed to complete the section shown. Rather, its purpose is to show the layout in schematic form only.

In the diagrams the letter A represents the locomotive and the letter H a goods brake van. The intervening letters represent an assortment of whatever wagons you choose to use. One way of carrying out the simple exercise of arranging the wagons in correct alphabetical order is to use the main line, as well as the two sidings in the course of the operations. It is possible to do the job using the two sidings only, but this is a little more difficult. If you are not an experienced hand at shunting I would recommend you to try the easy way first. To form the letters into alphabetical order the van H will have to be brought out and placed on the main line. This is simply done by moving both D and H together on to the main line, and then uncoupling H. The next movement is to shunt F from one siding to another, leaving A coupled to D, E, C in one of the sidings as shown in Diagram 3. A then moves D, E from the siding where they are shown in Diagram 3 to the other siding to join F, G, B. A then returns to wagon C as shown in Diagram 4. The sorting is now very nearly complete; all we have to do is to make the engine shunt C on the back of D, E, F, G, making sure that B remains uncoupled and to move them on to the main line, where A uncouples, and returns to fetch B, which is attached to the train.

A more interesting movement would be the complete reversal of a train, using only the oval and the two sidings. The movements involved in this would be very

(*Continued on page 534*)

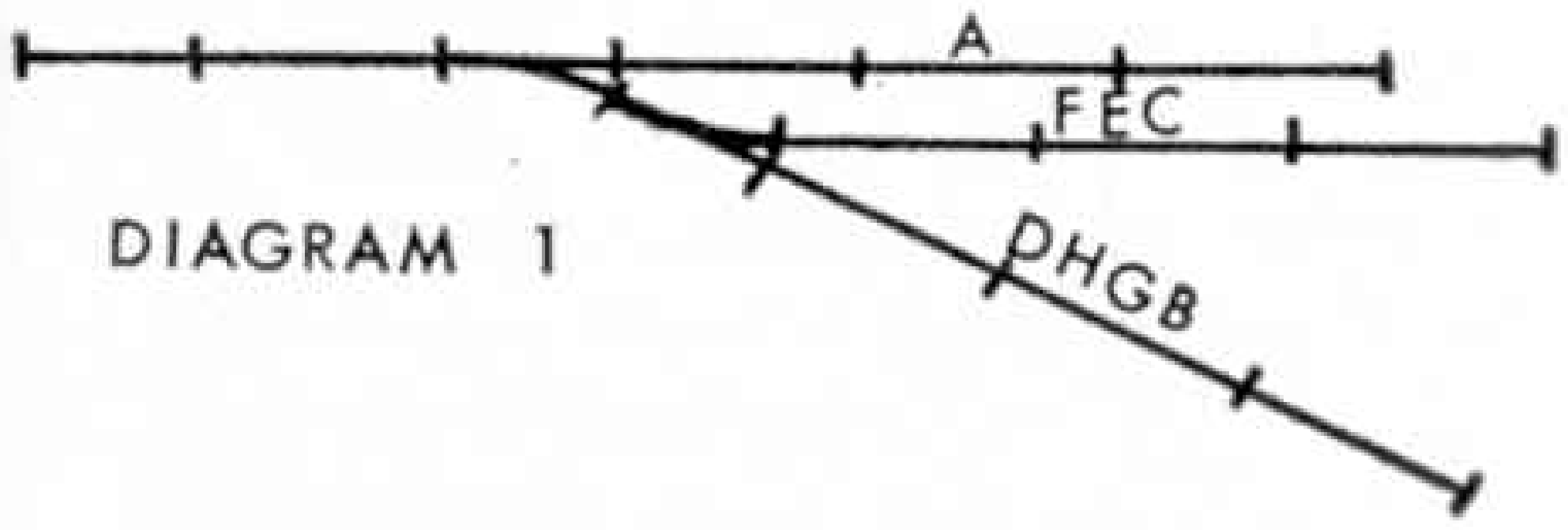


DIAGRAM 1

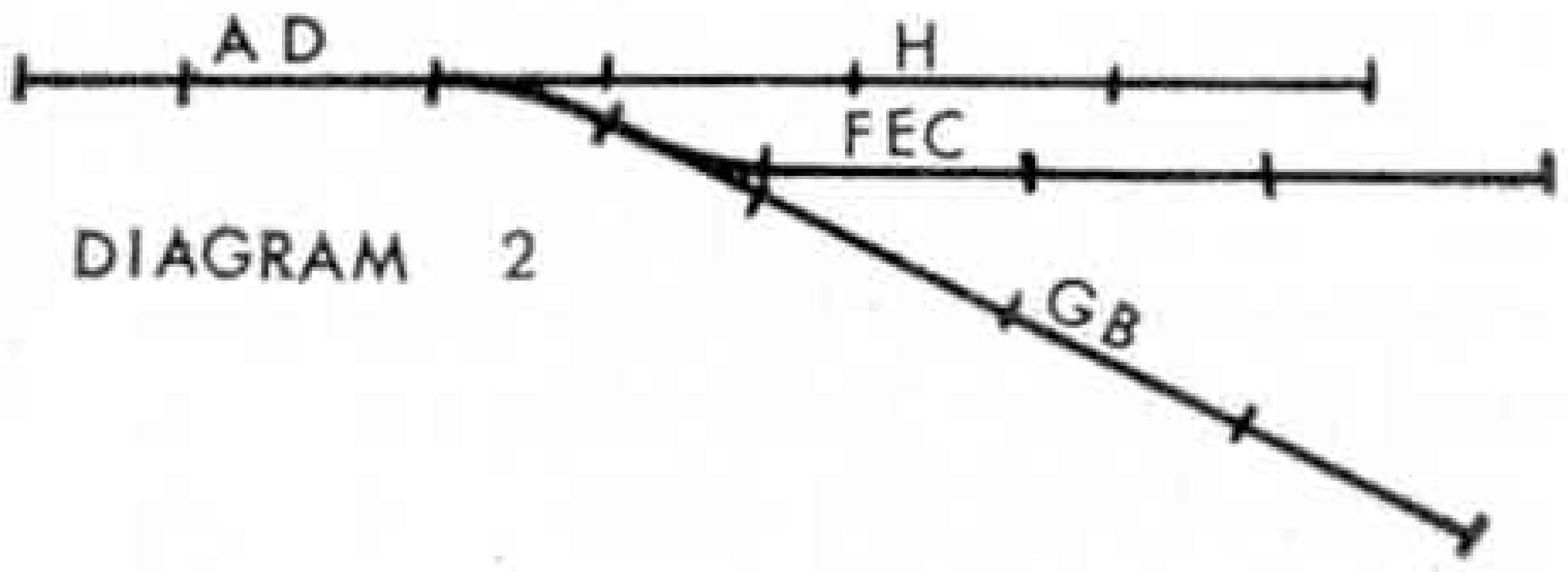


DIAGRAM 2

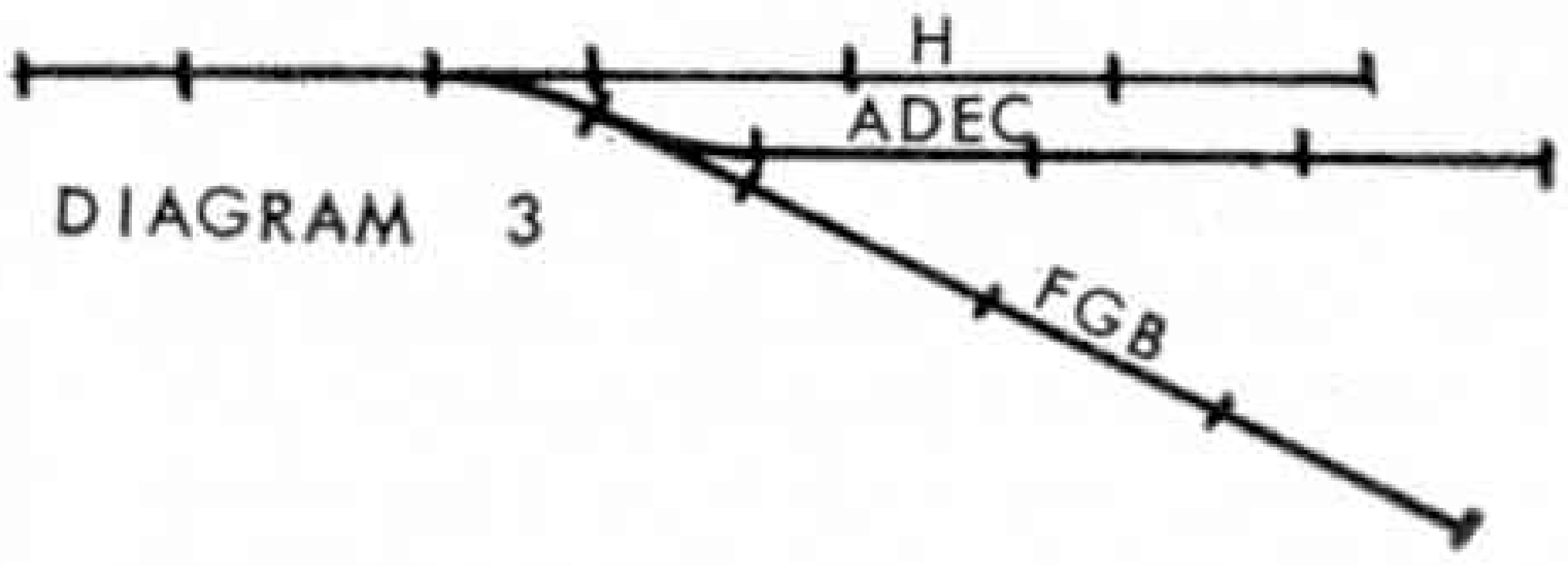


DIAGRAM 3

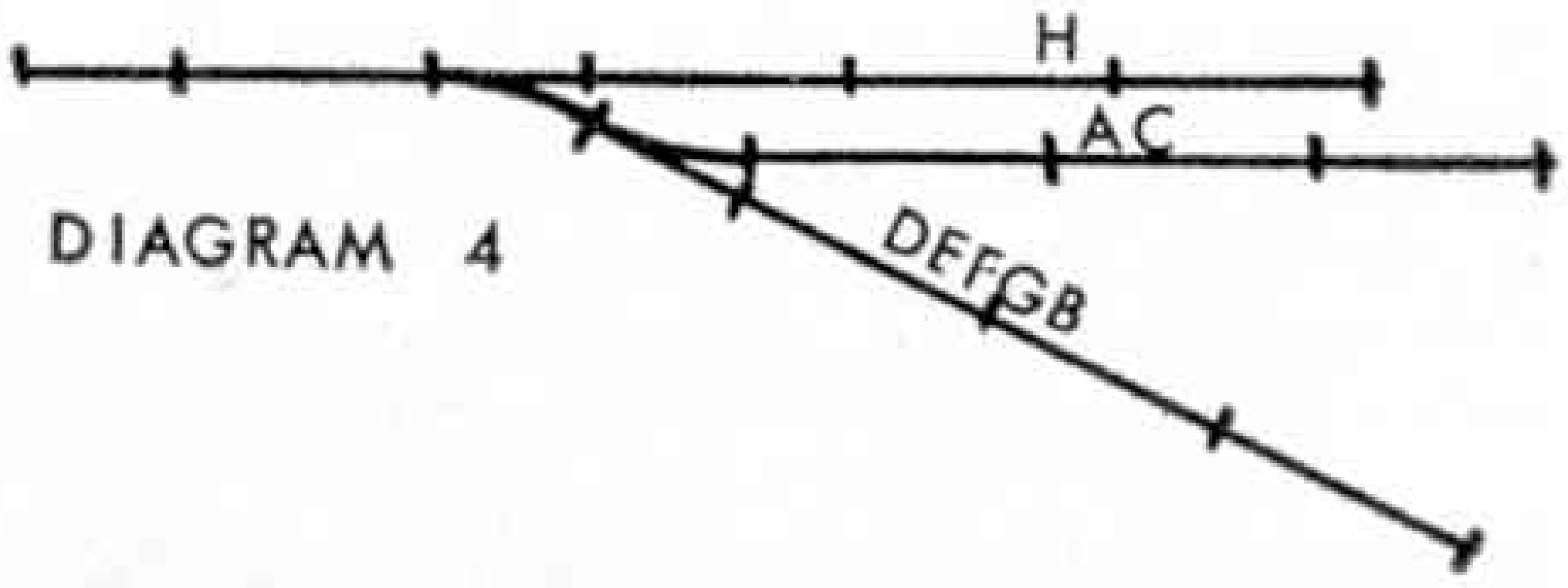


DIAGRAM 4

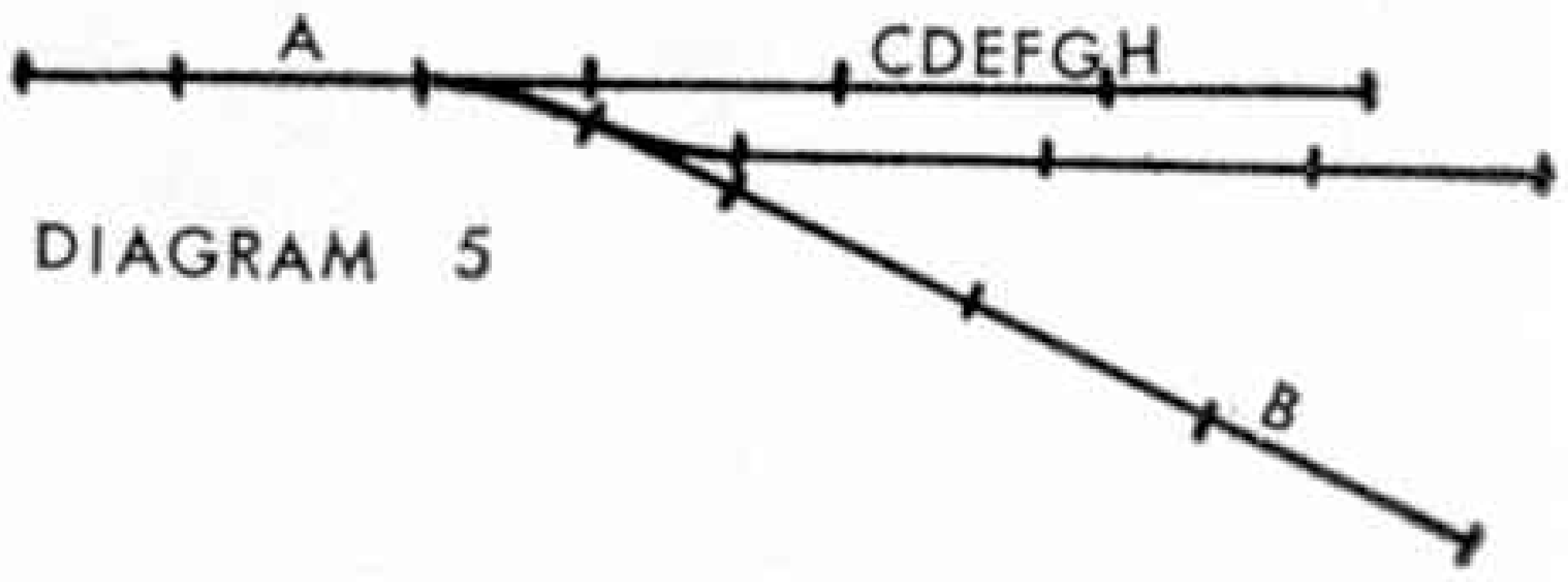


DIAGRAM 5

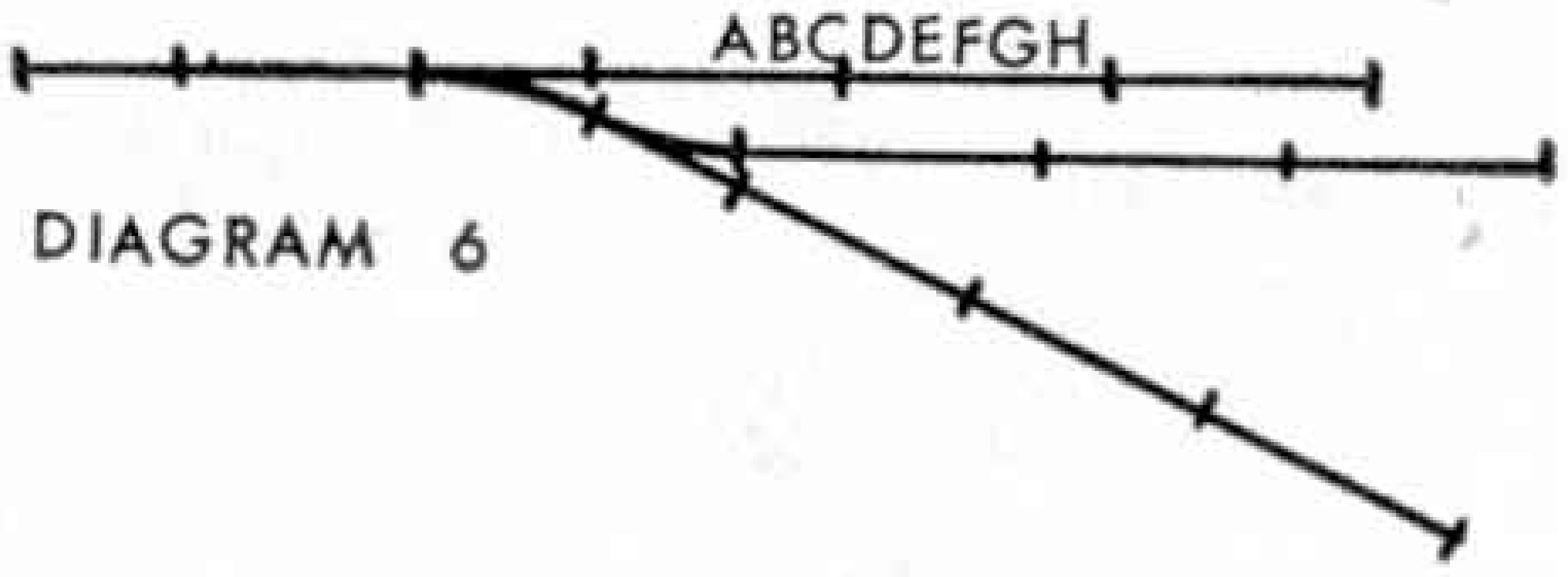


DIAGRAM 6

Top: S.R. 0–6–0 Tank No. 30270, an ex-L.S.W.R. locomotive of class G6, is here seen shunting wagons at Salisbury. Photograph by S. Creer. Right: The diagrams illustrate in schematic form the shunting sequence described in detail on this page.

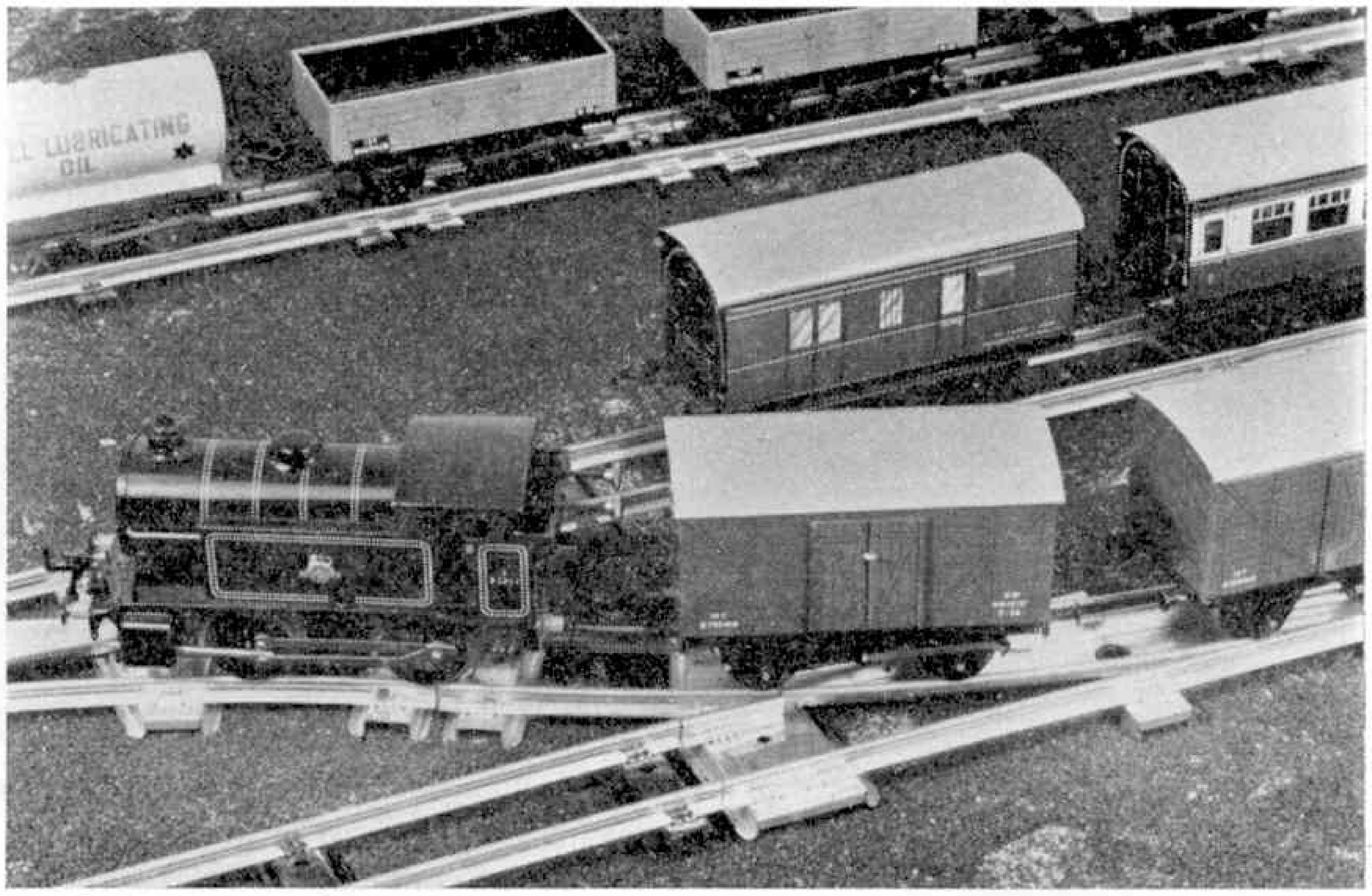
TRAIN TIME

By

"TOMMY DODD"

WITHIN the next few weeks in many homes it will be "train time"; in other words, many youngsters will become the proud owners, perhaps for the first time, of Hornby Train Sets. Indeed, many young "railwaymen" get their first experience of train running with a Hornby Gauge 0 Clockwork-driven Locomotive and train. Within the limits of the present range of Hornby Clockwork equipment, there is still a fair amount of choice, not only in the complete Train Sets but also in the rails and rolling stock, as well as accessories that are available separately.

Taking the Train Sets first, these may be divided into three basic classes, in which Goods Train Sets and Passenger Train Sets are produced. These are respectively the Nos. 20/21, 30/31 and the Nos. 45 Tank Goods Train Set and 41 Tank Passenger Train Set respectively. In the Nos. 20/21 and 30/31 ranges the Goods Train Set carries the lower number in each case.

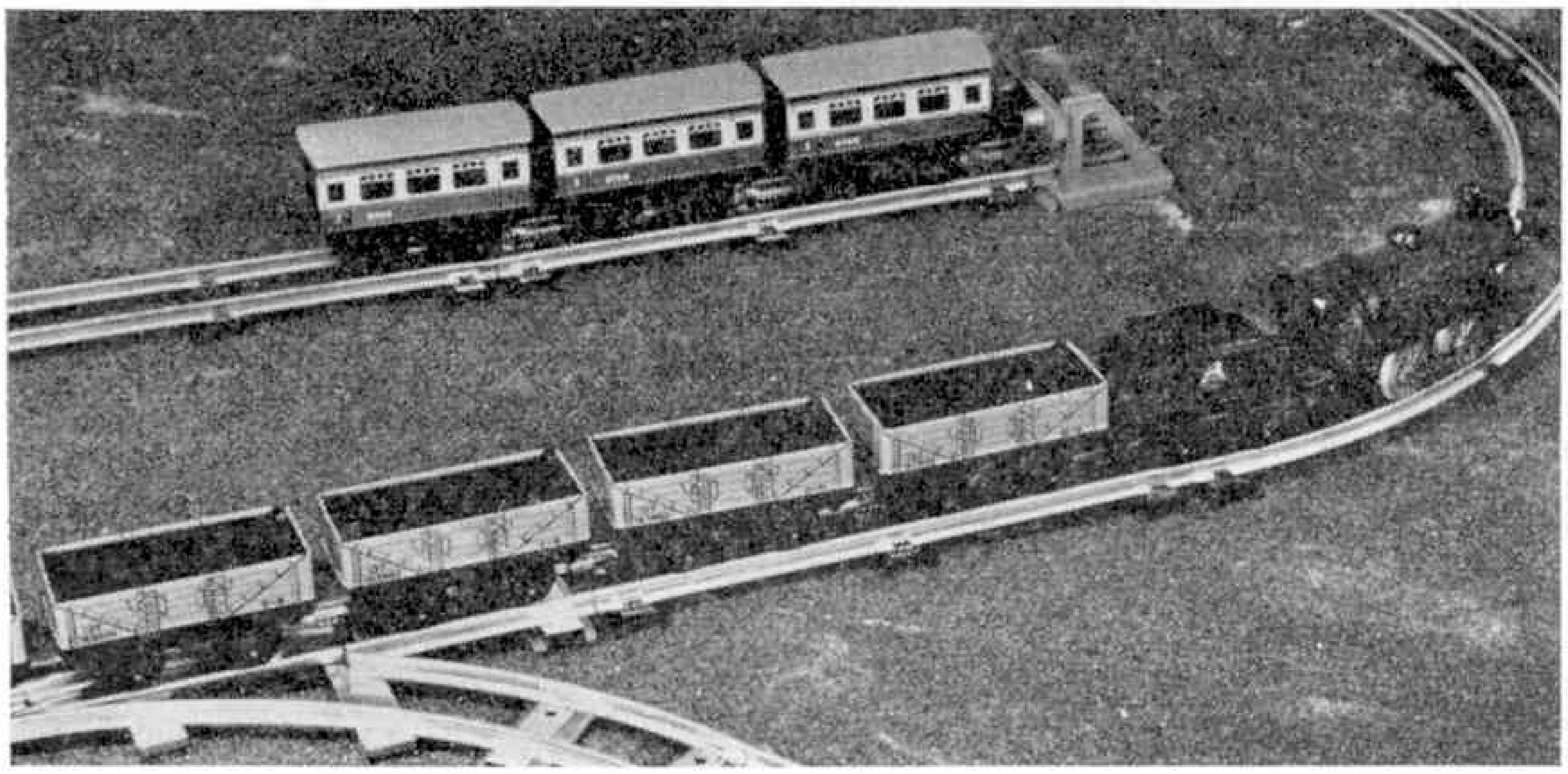


A Hornby No. 40 Tank passes over the Points from one track to another with a train of No. 50 Vans.

All good railways grow, and it is practically certain that additions are made to most Train Sets as soon as the first excitement of running the train is over. In many cases, too, additional items are obtained at the same time as a set and it is important to see that these extras, whether rails or rolling stock, or even locomotives, will suit the contents of whatever train set is involved. Thus while the standard Hornby Straight Rail can be added to the rails contained in any of the Train Sets, it is important to note that in the 20/21 and 30/31 range any curved rails, points or crossings must be of the 1 ft. radius variety; otherwise difficulties are likely to occur when the attempt is made to include these items in an expanded layout.

While I am dealing with the subject of Train Sets, it might be as well to refer to the Wagons, Vans and Coaches in the respective series that can be used successfully with the contents of the standard Train Sets. Take, for instance, Sets 20/21. With the former you can use any or all of the following: No. 20 Crane Truck, No. 20 Rotary Tipping Wagon, No. 20 Side Tipping Wagon and No. 20 Wagon. With Set 21 you can couple up the No. 21 Coach. The type of coupling used is the same for all Nos. 20 and 21 components.

A similar position exists in the No. 30/1 range. The couplings of items in this class differ from those of the smaller Nos. 20/21, but this does not prevent the two kinds of vehicles being coupled together, even though there is some slight difference in the general proportions of the stock concerned.



Train of "Coal empties" on the run behind a Hornby No. 20 Locomotive on a simple layout with 1 ft. Radius Curves and Points.

In the No. 45 Tank Goods and the No. 41 Tank Passenger Train Sets, the Locomotive is the No. 40 Tank, the only Tank Locomotive in the Hornby range. In the Goods Train Set the vehicles belong to the No. 50 range, whereas in the Passenger Train Set the Coaches and the Passenger Brake Van are classed as No. 41 items. All these 40's and 50's, if I may call them such, can be used together. They have the distinctive type of Hornby automatic coupling, which is designed so that when the vehicles are pushed together by a locomotive the couplings engage. This type of coupling is also fitted to the bunker end of the No. 40 Tank, but a plain link coupling is fitted at the front end. This can be used successfully along with the automatic couplings, so long as the loop of the latter type is placed over the hook of the link type coupling.

The Curved Rails included in the Nos. 45 and 41 Train Sets are of the 2 ft. radius variety, so that any additions made to the layout in the way of curves, points and crossings should be of 2 ft. radius.

The hints on Locomotive lubrication and general management that are given on the instruction leaflet packed with each Hornby Train Set and separate Locomotive should be sufficient for Hornby engine drivers to get the best from their charges. Do not forget that engines run a lot better when they have been in use for a little while and have had a reasonable chance to become "run in". Although Hornby Locomotives will stand up to a great deal of hard wear, it is best not to be rough in the handling of the brake and reversing rods.

WITH THE SECRETARY

Club and Branch News

GOOD NEWS FROM MANCHESTER

I am always delighted when a new club is formed, and it was with a sense of great anticipation I went along to see the boys of the newly-formed 43rd Boys' Brigade Company Meccano Club in Manchester.

The club is actually in Didsbury, which is one of Manchester's suburbs, and meetings are held every Friday evening in the Beaver Park Baptist Church Hall. Leader and secretary is Mr. David R. Thompson, a tall, athletic young man who has under him some really enthusiastic young members. There are fifteen of them, in fact, and twelve were present on the night of my visit. I thought it would be rather a nice idea to record all their names, and here they are: Malcolm Starkey, David Puckle, John Fletcher, David Coupe, Ian Wilson, Barry Tomlinson, Peter Taylor, David Mallinson, Paul Read, Barrie Lees, Richard Curphy and Michael Cobbam.

Captain of the 43rd Company is Mr. Geoffrey Harris, who is also well-known throughout the north-west of England as District Organiser for the Lancashire and Cheshire Boys' Brigade.

The boys were building a variety of models, including a new type of hoist, a lift bridge and a car chassis complete with differential and gear box. Their leader, Mr. David Thompson, is also a keen Hornby-Dublo enthusiast as well as a Meccano fan. There is every possibility that a branch of the Hornby Railway Company will be formed at Didsbury in due course.

HORNBY RAILWAY COMPANY BRANCH RECENTLY INCORPORATED

No. 584, Willenhall St. Giles Youth Centre—*Chairman:* Mr. John F. Squire, 27 St. Annes Road, Willenhall, Staffs.

CLUB NOTES

Shebbear College (Beaworthy) M.C.—Two members have been enrolled. The club began the session by constructing a crane for bridge building, etc. It is powered by a 20-volt electric motor, has a three-speed gear-box, and mechanisms for raising and lowering the 4 ft. long jib and the pulley block, and for turning the entire crane. The jib and the pulley block are equipped with clutch and brake. *Secretary:* Mr. M. R. J. Kent, Shebbear College, Beaworthy, N. Devon.

AUSTRALIA

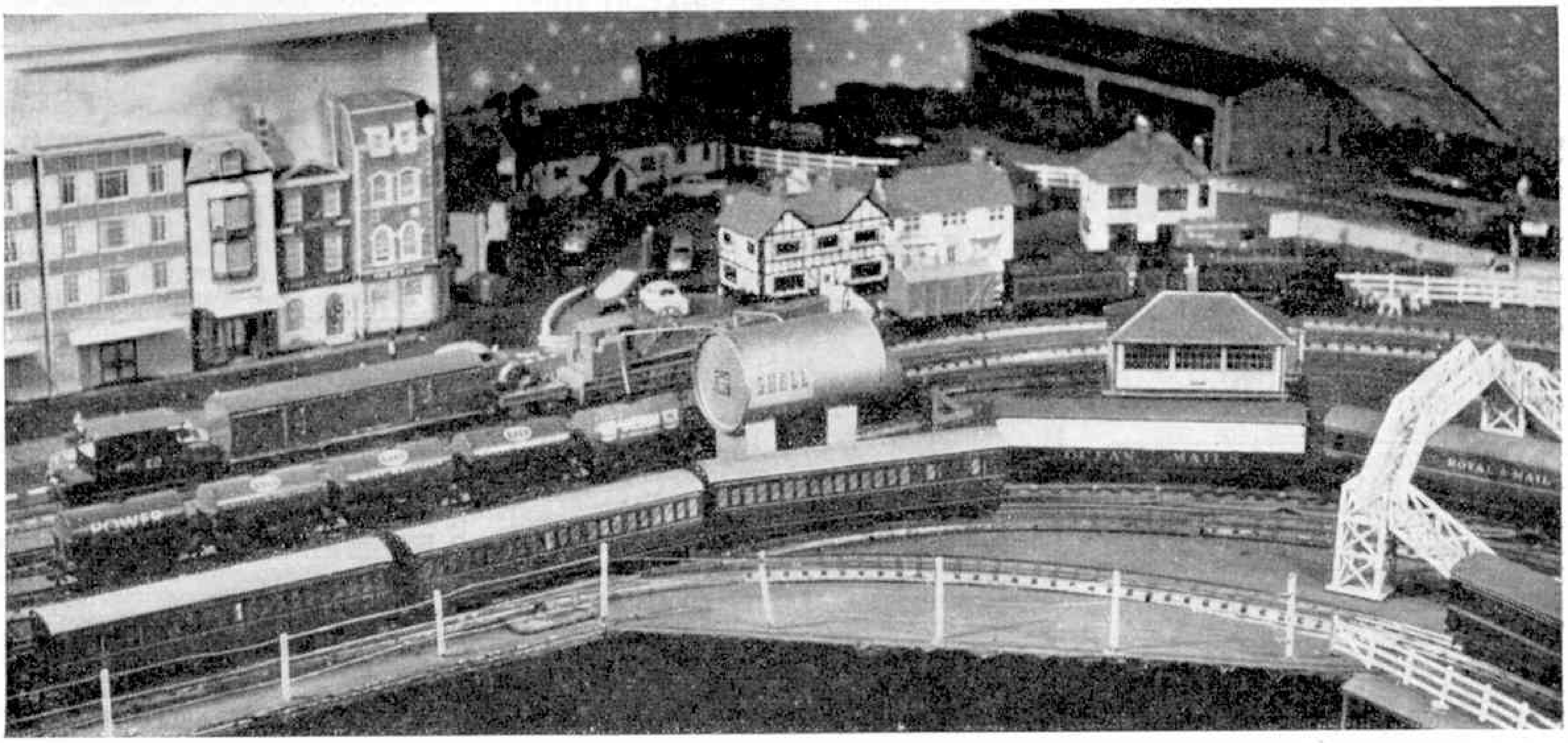
Maylands M.C.—Various activities maintained continuity of the club during the school holiday period. One event was a visit to the Vickers Hoskins plant at Ashfield, where the work being carried out in the machine shop attracted most attention. Another interesting visit was to Newspaper House where John Holliday, an ex-member of the club, was host to the visitors. They were shown the preparation and production of an afternoon daily newspaper, and were able to follow the story of the paper from its preparation in the linotype machines to the final process where the newspapers are printed, cut and folded ready for despatch.

On another occasion several of the boys got together and formed a working bee, when they mixed the materials and laid the cement for the front path, and a concrete apron for the side doors. Most of the lads who worked on the project etched their names in the cement before it had time to set, thus providing a permanent record of their good work.

A Parents and Sons Night was well attended by members and their relatives. The puppet group provided four entertaining sketches, and were given a good hand for this—their first public performance. During the evening Mr. H. R. Robinson, M.L.C., as president of the Perth Shire Council, handed to the club a cheque for £A100 as a donation to the building fund.

The Ladies' Auxiliary of the Liberal Party, and the club's Parents Committee, combined in an afternoon event at the local Presbyterian Hall. The results of their efforts totalled £A29. *Secretary:* Mr. Trevor Criddle, 17 Kenilworth Street, Maylands, Western Australia.

A corner of the extensive Hornby-Dublo layout of the Keswick (Wembley) Hornby Railway Company Branch. In the foreground is Overton village with (top right) the new army depot. The breakdown train passing the village is headed by Hornby-Dublo 4-6-0 "Bristol Castle".



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Liberia	**1/9**	New Zealand	**3/6**	Japan ..	**4/3**
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Zanzibar	**2/6**	Turkey ..	**2/–**	Spain ..	**2/3**

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W. GRANVILLE LUCAS (Dept. GN), HINCKLEY, LEICESTERSHIRE

For Stamp Enthusiasts

Boiling Lake Land

By F. E. Metcalfe

I DO not suppose that many readers will know the country whose stamps I am going to discuss this time, under the above title. It refers to the West Indian island of Dominica, the third in size of British-run islands in the Caribbean. In spite of the fact that you will find there a geyser (called locally the *Boiling Lake*) and plenty of traces of the volcanic origin of the island, there are plenty of worse places one could go to for a holiday. Dominica has recently issued a fine set of stamps which has drawn attention to this island, and this is as good an excuse as any for us to take a philatelic trip to the West Indies, so here goes.

I have mentioned that Dominica is one of the larger British Caribbean islands—its area of 304 square miles is quite a stretch for that part of the world—and moreover it boasts of a mountain 4,747 ft. high, which is almost half as high again as any peak we possess in Great Britain. The name Dominica is derived from the fact that the island first came to European ken on a Sunday, and, of course, it was our old friend Columbus who spotted it while on his second trip to the new Western World. The actual date of discovery was November 3, 1493. Now while it only became known to Europeans on that date, we were by no means the first human beings to find it, for it was already populated by those tough, warlike Caribs who used Dominica as their jumping-off ground to attack any whom they chose to regard as enemies—which seems to have been everyone they came across.

Would-be European settlers, of course, came under that category, and this is why even late in the seventeenth century there was no settled community there. In time, Europe's stronger arm prevailed, and decks were cleared, so to speak, for the French and ourselves to take over the scrapping, which we both did with the usual relish! This "free for all" finally terminated with the inevitable British possession, in 1805. Since then things have gone fairly smoothly for the inhabitants, and by West Indian standards at any rate Dominica has been fairly prosperous, with fruit and cocoa growing providing means of livelihood. Ever since the Canadian Government (which has close links with the West Indies) undertook a survey last year, timber is playing an ever-increasing part in the Dominican economy, as there are large resources of hardwood suitable for furniture making, etc. Incidentally, Dominica was part of the Leeward Islands until 1940 when it joined the Windward Islands group, and under the new Constitution of 1960–61 it now enjoys a considerable measure of self-government.

Coming to the philatelic history of the colony, the kick-off started in 1874 when three of the dull key type stamps bearing the portrait of Queen Victoria appeared. (What a difference compared with the latest pictorial issue, which is such a fine example of modern printing in general and the work of British Security printers in particular.) This 1874 issue was followed by more values three years later, and I am afraid that all of these stamps, in fine condition, are out of the reach of most of us. In 1882 we got the usual surcharged stamps, and as apparently they had run out of the ½d. value the 1d. was cut in two vertically, and ½d. printed on each half. These stamps are also scarce, as can be imagined, especially those copies which by accident or design had the overprint inverted.

In 1903 appeared the first larger-size stamps of the KEVII reign. The values up to 5s. depicted Dominica from the sea, and the top value bore a portrait of the King. Later followed stamps of similar designs but in new colours, and with the watermark changed. In 1914 there was an alteration in the portrait on the 5s. stamp, as by then King George V had come to the throne. Yet it was not until 1923 that the first real KGV issue appeared, although during the first world war a number of the then current stamps were overprinted for War Tax purposes. Then, in 1938, came the first real pictorial issue. By now George VI was king, so, of course, his portrait was on the stamps. Dominica has had the usual small special issues for the Royal Silver Wedding, etc. In 1951 came a new set of definitives, depicting eleven new designs which, in turn, gave an almost complete picture of the island itself and of its activities. The stamps were line engraved, and when the time came to replace the royal portrait with that of Queen Elizabeth, in 1954, the same designs were used. There was a change, however, in 1957 when three values were replaced by new pictures, showing mat and canoe making, as well as banana growing, this fruit now being a most valuable export.

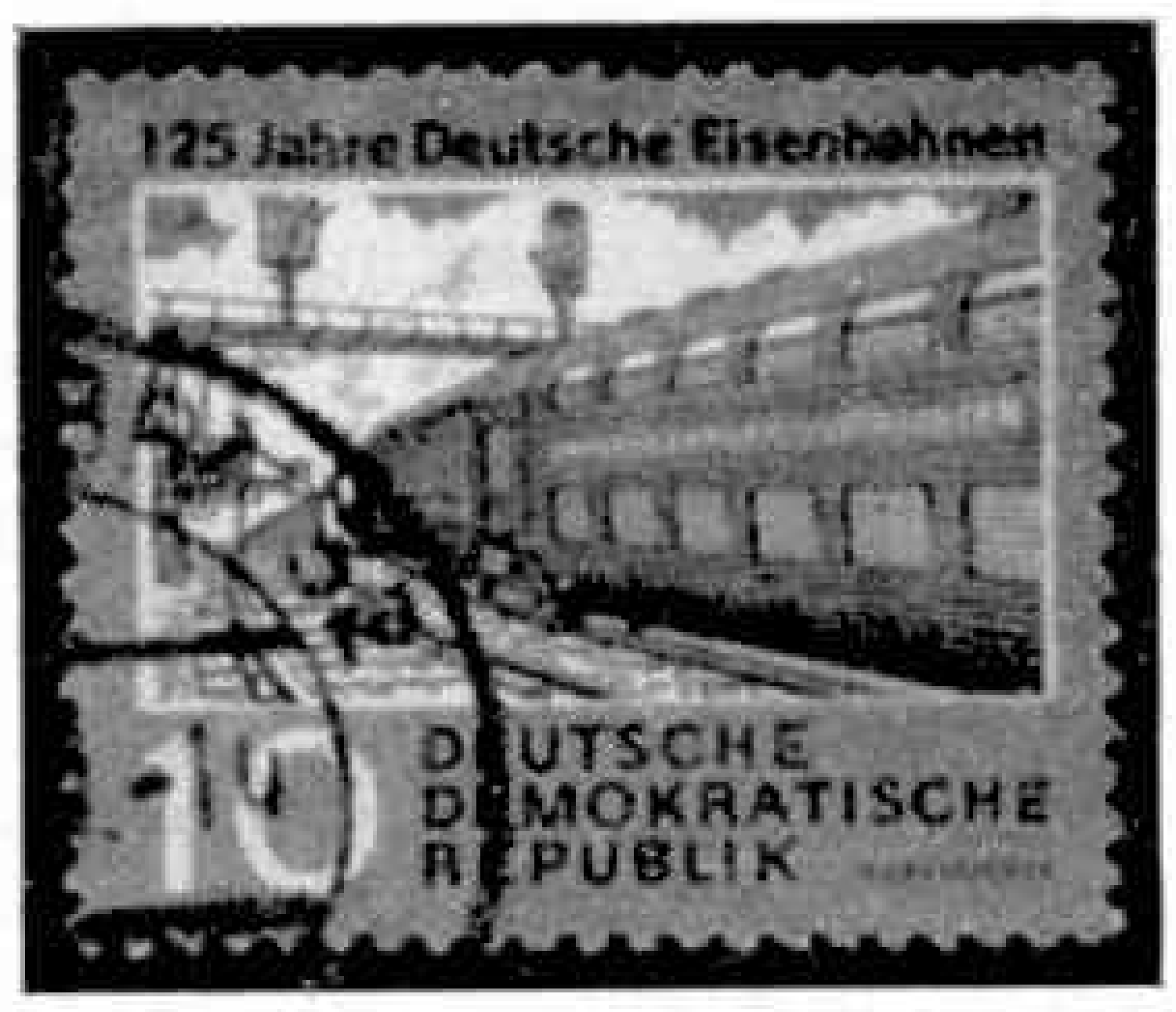
Now we come to the set issued on May 16 this year. This was printed by Harrisons, who for photogravure printing are in the top flight, as can be seen from the stamps themselves. It is a most interesting issue, so no wonder the demand is still great. The top value is 4.80 dollars but that need not deter anyone, for even a set to 24c. (1s.) consists of 12 stamps, and apart from the Annigoni portrait of the Queen on the 2c. and 5c. values a varied view of the island and its activities is provided by the rest.

And that about brings us up to date (not to overlook, of course, the "Hunger" and "Red Cross" stamps which Dominica issued along with most of the rest of the colonies). If anyone wants to take up the stamps of this colony they might fare much worse elsewhere, and if anyone planning a holiday there this winter wants a secretary I think I know someone who would go with them like a shot!

Stamp Gossip

Puffing Billy

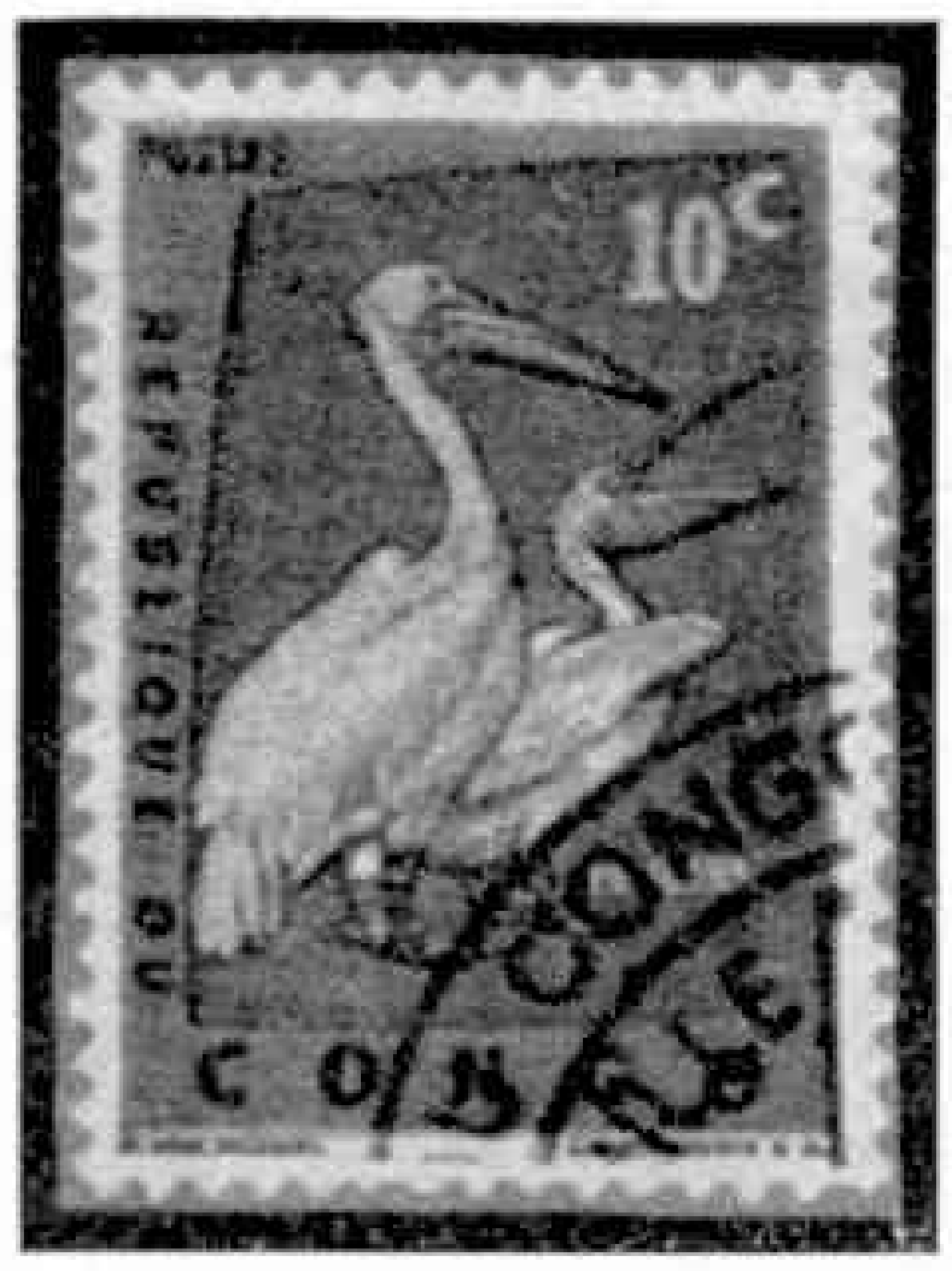
I AM not a bit mechanically minded, and although many readers, when they see an express train tearing along, might think that it could be pulling a bit better, to me it would be all perfect romance, for nothing in the whole world of movement (you can have your smelly and lethal racing cars) gives me such a thrill as to see a steam-hauled express flying along in all its majesty at a good sixty. When I was a youngster we had to make our own pleasures. Fortunately for us, if we had only known it, our initiative


125 Jahre Deutsche Eisenbahnen
10
DEUTSCHE DEMOKRATISCHE REPUBLIK

was not being sapped away by a surfeit of pocket money such as is lavished on today's younger end (hence their boredom, and the resulting mischief).

Brought up in a north-west small town served only by a branch line, we could, by walking a couple of miles, come to a main line station through which passed all the expresses between Glasgow and Euston. There was one express which used to tear through the station at around 9.20 p.m.—you could generally set your watch by it, for those were the days when a railway timetable meant what it claimed—and often at night we would walk up to this station, and wait for that wonderful sight, from another world, to roar through. I used to notice how quiet we all were as we walked back to our town, and to bed. Alas, I am the only one left of that little band of train spotters, for it was a long, long time ago. For this reason I love "train" stamps, like the one illustrated.

PROTECTED BIRDS



We know a whole lot on this subject, even if we do not always agree as to which of our birds should be protected. But ours is not by any means the only country acting in such a civilised manner, and abroad there are some wonderful feathered creatures to protect. Take, for instance, the Congo Republic. There they have some strange birds indeed, birds which would certainly give us a shock if we found any flying wild in our skies. We can see what some of those birds look like from some colourful stamps which the Congo has issued; two series, in fact, depicting protected birds. The stamps are quite cheap, and I think we should support a worthy plan by buying a set. The stamp illustrated belongs to the second series and the birds shown are, as all will know, pelicans. Of course, you can see the real thing in any zoo; but I also like to have pictures of such strange things in my albums.

REVENUE STAMPS

Some time ago I received a telephone call from a lady who asked if postage stamps of the reign of Edward VI were worth anything. "Oh, about a million pounds, if you have any, but don't you mean Edward VIII?" I answered. Well she did, of course, and I had to tell her that these latter stamps are still so common that even mint are worth very little above face value (I can still recall the big rush there was to buy these stamps when they first appeared, hence their low prices today). Now the same day that she rang up a letter arrived from another lady saying that she had a £1 stamp which antedated, by quite a margin, the "Penny Black". Alas, I had to tell her that it was not a postage stamp which she had, but some kind of a revenue label. I am afraid that people are often confused by such items.

Now there are some revenue stamps—or at least there were—of that category, until they were overprinted POSTAGE. Nyasaland, on obtaining its independence, was in a great hurry to have its own postage stamps, for it wanted to proclaim its new status to the world, and what could provide better publicity than postage stamps? Unfortunately, it ceased to have its own postal issues when it became part of the Central African Federation, in 1954, and to prepare new stamps takes quite a time. Nyasaland, although it had no postage stamps of its own, *did* have revenue stamps, with the plates already in being, ready to print as many more as might be needed. So print the revenue stamps, overprint them POSTAGE and "Bob's your uncle", and that is precisely what Nyasaland has done—or at least what she has got Bradbury Wilkinsons to do for her.

One more point. These Nyasaland stamps will only have a short life, as a brand new issue is already in hand, so it might be a good idea not to delay too long about buying these overprints if you are interested in Commonwealth stamps at all, as so many obviously are.

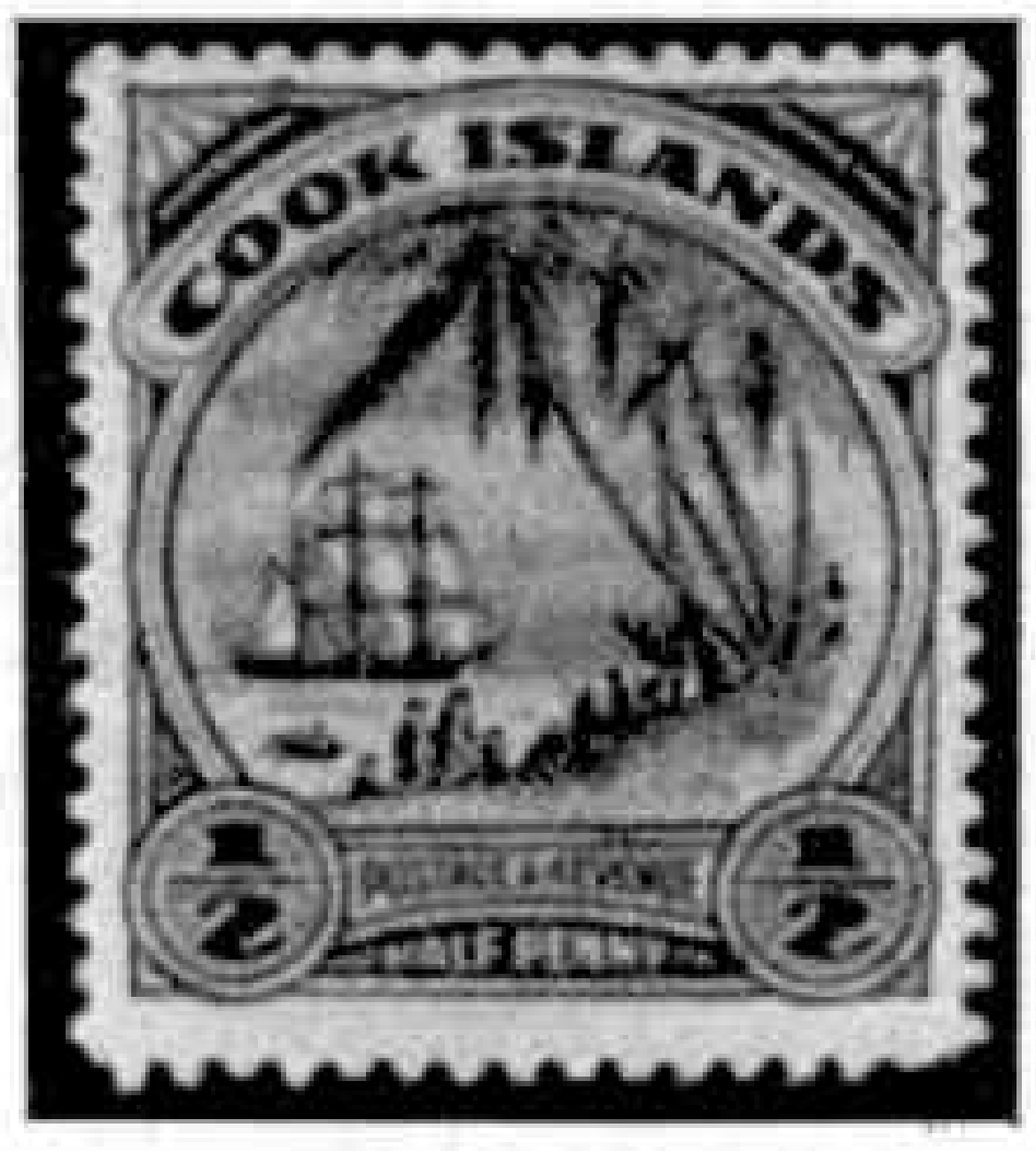
THE TIP OF THE MONTH

My tip this month will be quite topical for it has to do with Christmas stamps. I suggest that a collection of these interesting items is well worth forming, as in these days of thematic collecting most philatelists like to have a little sideline collection, and the prospects of more and more Christmas stamps being issued are

(*Continued in column 1, next page*)

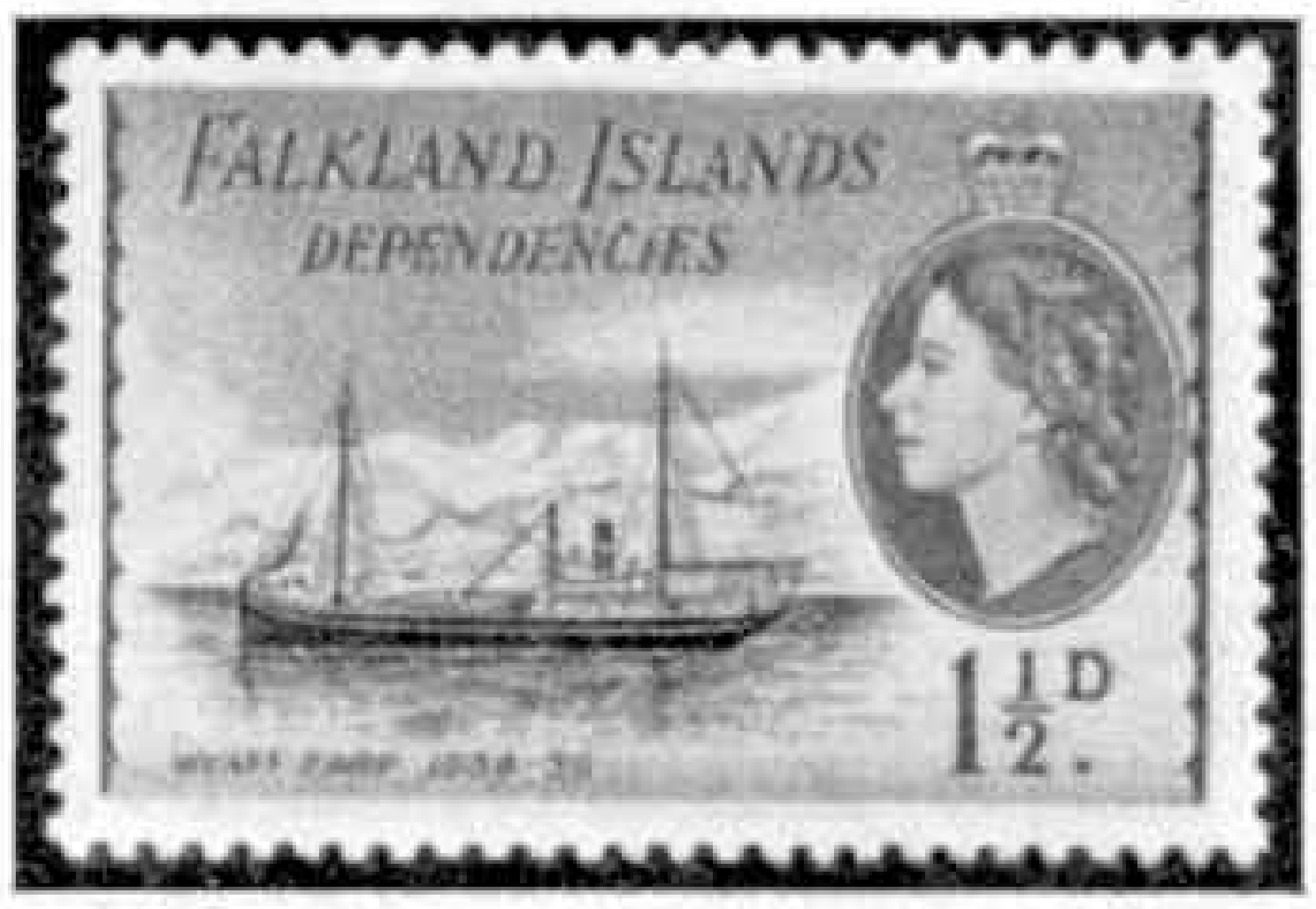
By E. W. Argyle

The Royal Navy On Stamps



H.M.S. RESOLUTION

CAPTAIN James Cook, R.N. had a great fondness for the Resolution *and used her on his last two voyages. She was formerly a Whitby collier of 462 tons, and was the biggest ship used by the explorer. When purchased by the Navy she was renamed* Drake, *but as it was thought this might offend Spanish feelings she was given the name* Resolution *instead. Although entered in the Navy list as a sloop, she was not converted into a fighting ship and was only given a few light guns, mainly for courtesy salutes.*



H.M.A.S. WONGOLA

MORE familiarly known as the Wyatt Earp, *this ship carried Sir Hubert Wilkins, with Lincoln Ellsworth as adviser and commander of the ship, to the Bay of Whales and Ross Sea, in the Antarctic, in 1933. Originally built as a Norwegian herring boat, in 1919, she was bought by the Australian Government in 1939 as a research ship. When war broke out she was requisitioned for the Royal Australian Navy and became the patrol vessel H.M.A.S.* Wongola.

Stamp Gossip—

(Continued from previous page)

bright indeed. I think it was Cuba which first started the idea (all will remember those little stamps depicting a plump turkey, or even Santa Claus himself). Already the U.S.A. is in its second year, and Australia, New Zealand, Norfolk Islands, etc., are in the ever-widening group. I like the stamps which Australia has issued (Norfolk Islands use the same designs), but those of New Zealand, depicting famous paintings, and magnificently printed, as is Harrison's wont, are the ones which have captured much popularity. And look at Austria's 1963 effort. Can you resist that one?

Will our own country ever enter the field of philatelic Christmas cheer? Yes, I think we will, for as all the special stamps issued this year show, the Post Office has really changed its coat. A Christmas stamp, particularly for sending Christmas greetings, is such a nice idea (and the many thousands bought, which will never do any postal duty, make it a profitable one, too, for the Post Office). So I think that in a year or two's time you will be adding some G.B. to your sideline collection. Why not start now, while it will be easy to get the stamps you need?

That is my Christmas tip, and I do not think I could end this year with a better one, for such a collection, apart from any question of cash profit, could yield such a good dividend in enjoyment. And now may I wish, with all sincerity, any readers I may have a very, very happy Christmas, and lots of philatelic pleasure in the year ahead.

TWENTY (CHRISTMAS) QUESTIONS ANSWERS

1. (a) Sir Isaac Newton. (b) Vasco da Gama.
2. Princess Alexandra of Kent; The Duchess of Gloucester.
3. It is a corruption of St. Nicholas, the patron saint of children.
4. Bohemia.
5. (a) King George V in 1932; (b) Windsor Castle (1940–44); (c) Auckland, New Zealand.
6. Black Peter.
7. Natal (now part of the Union of South Africa), and Newfoundland (now part of Canada).
8. Jack Johnson, who beat Tommy Burns on December 26, 1908.
9. (a) March 25; (b) June 24; (c) September 29.
10. 2100 (years divisible by four are Leap Years—except centurial years unless they are divisible by 400).
11. Antarctica.
12. Indian Ocean and the Pacific.
13. King Edward VII.
14. The sacrilege of the Stone of Scone.
15. White.
16. January 6, the twelfth day of Christmas which is Epiphany. Since the reign of George III, two deputies—Gentlemen Ushers of the Royal Household—have acted for the Sovereign, making the offering at the Chapel Royal or at the Queen's Chapel.
17. The Prince Consort introduced it in 1840 from Germany.
18. Italy. In the church of San Nicola, Bari.
19. Ebenezer.
20. William the Conqueror, 1066.

Scores:

26–30	Top of the class.
20–25	Very good.
15–19	Good.
10–14	Fair.

* * * *

PUZZLE ANSWERS

The Four Tables: 2,116 tiles.

Circus Visit: Jim 3s. 0d.; Peg 2s. 6d.; Ian 1s. 6d.

Christmas Dinner: 24 at dinner.

BOOKS FOR THE ASTRONOMY ENTHUSIAST

No doubt the very topical subject of Space Travel has a good deal to do with the greatly increased interest in the planets and other heavenly bodies, and the fact that Astronomy is more popular than ever. Here we review three excellent books on this fascinating hobby.

First, **The Young Astronomer** by E. A. Beet (Nelson, 7/6). This practical book is designed to show boys and girls who make their own observations of the heavens how to develop their interest to the fullest extent, what they can do and how to set about it, and the equipment they will need. The author explains clearly the phenomena of the heavens—sun, moon, planets, stars—and prepares the young observer fully for finding what he looks for in the sky, and understanding the significance of what he sees. It has fifteen half-tone illustrations and nearly 30 diagrams.

On a more ambitious scale is **Astronomy Explained** by A. E. Fanning, F.R.A.S. (Arco, 25/–) in which the author gives, in as non-technical a way as possible, a comprehensive picture of the present extent of our astronomical knowledge, coupled with a brief insight into some of the methods used by modern astronomers. There is a 24-page pictorial section of fascinating half-tone illustrations, and at suitable points diagrams amplify technical points in the text. The book will provide a firm foundation on which those who are sufficiently interested may build, if the joys of discovering astronomy lead them on to a wider study and further exploration. The author is Deputy Director of the Admiralty Compass Observatory.

Focus on Stars, or "Everyman's Guide to Astronomy", by Julius D. W. Staal, F.R.A.S. (Newnes, 40/–) is another book for the serious astronomer enthusiast. It is a fine account of the workings of the universe—the complex motion of our earth, the cause of tides and solar and lunar eclipses, the paths of the planets, the distances of stars and the composition of galaxies. Basic instruction is given in practical astronomy, with eight pages of plates and nearly 100 diagrams and drawings to help. Calculations are set out step by step for the reader to follow, so that by reference to tables—there are many in this book, giving all the necessary information—he may work out for himself the size and distance of any planet, star or galaxy. A unique feature is a set of monthly charts giving an all-the-year-round guide to the shifting geography of space. The book is illustrated in colour, half-tone and line.

The author is an experienced astronomer and planetarium lecturer.

In **The Story of the Shelvoke and Drewry Buses,** David Kaye relates the history of what he describes as "one of the most fascinating buses ever to appear in this country". He begins with the granting to Mr. W. R. Gates, a New Zealander, of a licence in 1924 "to ply for hire along the Sea Front at Worthing, with a 'satisfactory' vehicle". The vehicle Mr. Gates had in mind was "an S.D. Freighter chassis bearing an 18-seater body open to the ozone, but with roller blinds—just in case of a squall!" The story of the development of the S.D. Freighter and of how vehicles of this type operated by Mr. Gates came to be called "Tramocars" is interesting. Later chapters deal with S.D. Freighters which were in the service of Bournemouth Corporation and other operators. The text is amplified by useful fleet lists, and there are four pages of half-tone illustrations.

Copies of this booklet can be obtained from the author at 75 Broomfield Avenue, Worthing, Sussex, price 3/– each post free.

"BEST DEPOT" AWARD

Brentford Waterways depot, at the junction of the Grand Union Canal and the River Thames, has been voted "the best all-round depot in British Waterways". The title, together with a challenge shield, is awarded each year in an efficiency competition in which points are awarded for commercial success, good housekeeping, drive and energy, cleanliness and appearance.

Brentford depot, linked to the Port of London by the familiar lighterage service of the London River, provides an intensive delivery service between ocean-going ships and the Greater London area, the Midlands and the South of England.

Calling All

Bus Spotters

CHELTENHAM'S LOCAL SERVICES

By DAVID KAYE

This Bedford VAL 14, with Duple C52F body, is the latest addition to the fleet of Perrett's Coaches of Shipton Oliffe, who operate it in their stage carriage service into Cheltenham. Photograph by D. Kaye.

CONTINUING our story of Cheltenham's buses, begun last month, the Spa is served by many operators, but the actual town routes are worked by the Cheltenham and District Company, a subsidiary of the Bristol Omnibus Company.

Before nationalisation in 1950, the Cheltenham and District was *not* a member of the Tillings empire but was owned by the Red and White group. This can still be detected in vehicles like car No. 69 (HDG 445), one of those rare beasts of burden—an Albion CX 19 double-decker. This was working route 7, and another reminder of Red and White days was on route 2 in the form of No. 7 (JDG 789), a Guy "Arab III" with a *Duple* H56R body. However, the majority of Cheltenham and District's fleet consists of the usual medley of Bristol double-deckers, and these are numbered up to 98 (with a prefix of "L" for lowbridge versions). After 1959 this operator was allocated certain numbers within the main Bristol O.C. numbering scheme. Hence Nos. 6018/9 and 6036/7 are 60-seater "Lodekkas" in the operator's maroon and cream livery, as also is the larger 7073.

The day of my visit one Bristol O.C. bus (3679) had been "borrowed" to help out on routes 3/3A. Such a hire can take place with the greatest of ease, as both operators share a garage near the Lansdown station. Cheltenham and District operate nine routes in the town, which need an active fleet of 26 vehicles each day (viz. route 1—four; route 2—five; routes 3/3A—five; route 4—four; route 5—four; route 6—two; route 7—one; route 8—one).

The Bristol Omnibus Company operate from the Bus Station at Royal Well Place to Avening (route 46); Bristol (29); Broadway (47); Dursley (63); Gloucester (49, 49A and 164); Malvern (170); Oxford (171); Swindon (61 and 182) and Tewkesbury (45, 62, 62A and 62B). To cater for holidaymakers special routes are also run to the Slimbridge Wild Fowl Trust (29B) and Simmond's Yat (172). Bristol O.C. also operate a joint service with Stratford Blue (a subsidiary of Midland Red) to Evesham (routes 64/64A).

Midland Red run two of their express stage carriage routes (their equivalent to the Green Line) from Birmingham to Cheltenham Spa—X73 (via Worcester and Upton-on-Severn) and X74 (via Worcester and Pershore).

Kearsey's Bus Services are a native of the Spa, and their motley fleet of grey and blue vehicles operate to Ford (route 15 via Guiting Power), to Stanway (route 14 via Alderton), and to Winchcombe (a joint service with Bristol O.C. and Gillett's Coaches). Kearsey's fleet is numbered serially as each new vehicle is received, and so at the moment it is largely in the group 60–80. On service I spied 62 (KGK 797), which started life as London Transport RTL 133, and 73 (MDF 612), a Leyland PD2 with a Leyland L53RD body. A third Leyland being operated is 40 (CCK 649), another PD2/3 with a Brush L53R body, which proclaims its original owner, Ribble (where it was 2673). The single-deck fleet seemed to be a mixture of A.E.C. "Reliances" (like 76, ODG 983 with a Duple B44F body and 77, RDD 639 with a Burlingham C41F body) and Bedford SB1s (e.g. 80, 7971 AD and 81, 374 DD, both of which have Duple C41F bodywork).

Perrett's Coaches of Shipton Oliffe operate a route between Hazelton and Cheltenham, via Shipton Oliffe. The predominant hue in their livery is blue, and at the moment they run a fleet of 16 vehicles, all of which are of Bedford manufacture. I was interested to see their latest acquisition, a VAL 14 model (7873 DF), on actual stage carriage work—is this the first to enter such a realm? It, however, bore a Duple *C*52F body. YAD 906 has one of those very utilitarian Duple (Midland) B42F bodies. Among the dozen SBs with 41-seat bodies I spotted 4151 AD, 6338/9 AD and 5329/30 DD. Perretts also own two OBs, but they did not make an appearance that day.

Different was the case of Miles Coaches of Guiting Power, who were working Bedford OB HDG 973 (with, of course, a Duple C29F body!) on their route into Cheltenham. Whereas Kearsey operate between the two places via Naunton, Miles make a detour via Syreford and Brockhampton. Their timetable indicates that the latter also own at least one 41-seater coach and an 11-seater minibus.

Pulhams of Bourton-on-the-Water have a distinctive orange livery, and run from their home village into the Spa, using such coaches as 8321 DD and VVU 779 (Bedford SBs with Duple C41F bodies) and XDD 728 (the same with a Burlingham body). However, "back home" was HEF 511, an SB1 with a Plaxton DP44F body, and GCD 361, a Leyland TD5 with an East Lancs. H54R body, which was formerly No. 261 in the Southdown fleet.

Broadway Coaches of that well-known beauty spot operate a Bedford OB with Duple C29F body (HWP 637) and a Leyland PSU1 with a 41-seat body (HVJ 733). Also in the Bus Station I examined FKY 579, a Daimler with an H56RD body in an interesting livery of pale green (upper

(*Continued on page 534*)

Christmas Presents by Post—

(*Continued from page 493*)

temporary sorters are employed at this season, and that they have not the same experience as the regular staff in dealing with strange handwriting and inadequate addresses. So use block capitals, making them reasonably large, and see that the address is really complete.

The essentials for good parcel packing are strong paper for wrapping, strong string or adhesive tape for tying, strong rigid box and plenty of soft packing for fragile articles, and a slip of paper inside, stating the sender's name and address together with a list of the contents.

One of the most common faults is to use thin string which snaps easily; if you use self-adhesive tape, it should be at least one inch wide.

And, of course, even though improvements are continually being made to speed up the parcel services, it is still wise to heed the now familiar exhortation to "Post Early for Christmas". If you do this, the Post Office, with its planning, long experience, and new ideas, can cope.

It can do so even though more parcels—and other mail—than ever before are expected to be handled this Christmas. That means dealing with well over 1,000,000,000 items, including letters and cards. The marvel is that Christmas presents by post are delivered so efficiently and promptly.

Making A Nuclear Power Station

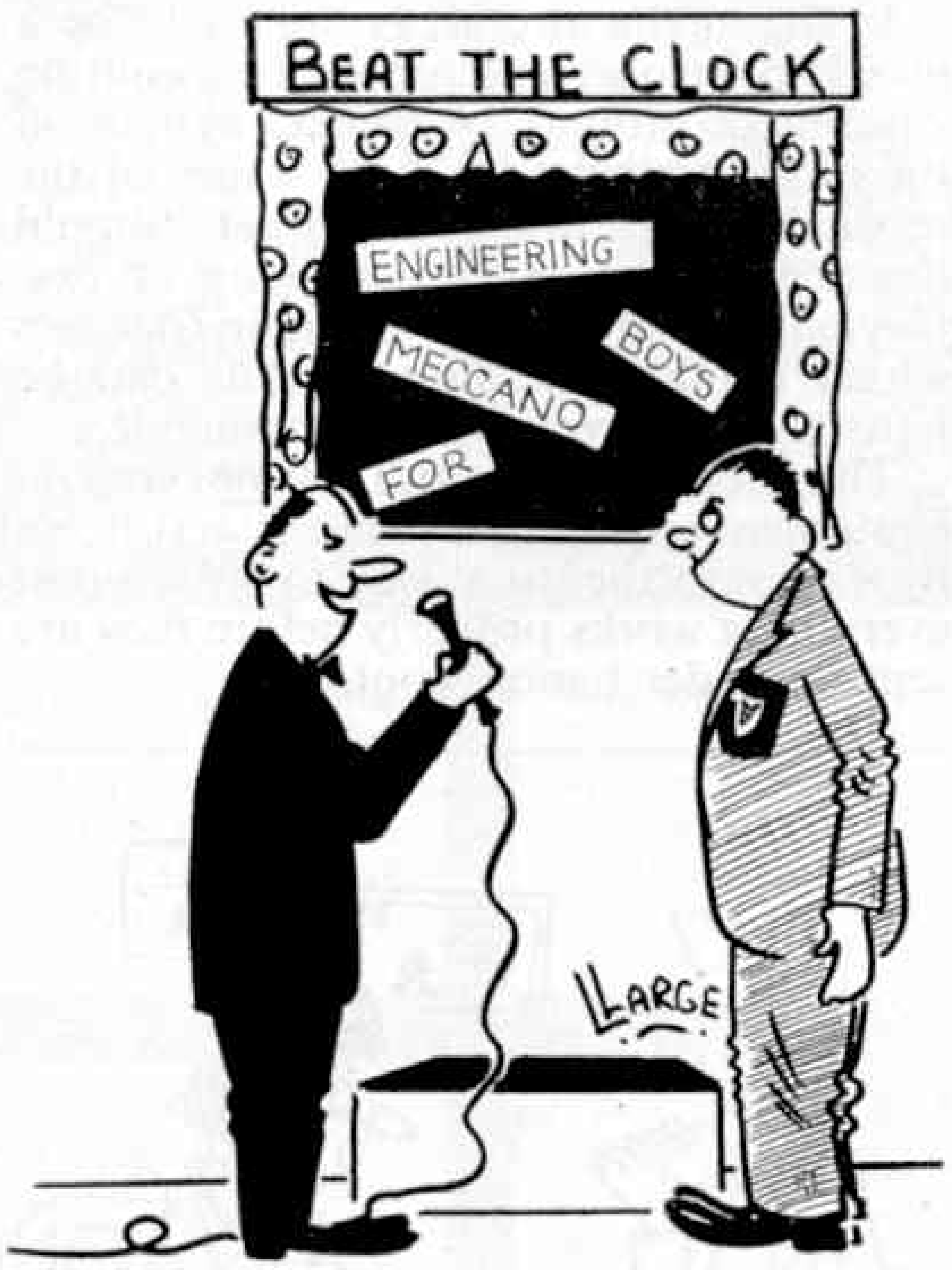
(*Continued from page 495*)

power station. By using the hot fluid to heat water in the heat exchanger this possible spread of radioactivity is eliminated.

Each of the two reactors at Hinkley Point has six heat exchangers, each 90 feet high and 21 ft. 6 in. in diameter, weighing 300 tons. Partly manufactured at Renfrew in Scotland, they were transported to Somerset by sea. On the site they were completed and, after cleaning and testing, they were lifted into position by a specially constructed Goliath crane. This crane spanned the entire reactor building and could lift 400 tons.

In order to protect the workers from the dangerous radiations produced by the chain reaction in the core of the reactor it is surrounded by a concrete safety shield. The main shield of the Hinkley Point reactors is a huge twelve-sided concrete casing 76 feet wide inside and 95 feet high, the walls being 7 feet thick. The lid of this enormous box is 11 feet thick. To stop the escape of the intense gamma radiation the concrete must be uniform throughout, if the concrete was less dense at some point the harmful rays would be able to penetrate it. Nor is it just a matter of building a solid wall of concrete. A large number of holes have to be made through it to take the tubes carrying the coolant, control apparatus and fuel charging mechanism, all of which have to be placed very accurately. Naturally, radiation streams through these openings, so a second shield, rectangular this time, is built round the first one. This is 6 ft. 6 in. thick.

From all this we can see that although the principles on which nuclear power stations work are quite simple, putting them into practice is far more difficult. It has required all the skill of our engineers to build nuclear power stations to the precision necessary for them to work efficiently and safely.



"Here is a well-known saying . . . You have 30 seconds to beat the Clock."

FLACON—

(*Continued from page 499*)

hours, corresponding to one night's use. The total weight of FLACON is less than 3½ lb.

Since most items in a survival pack are intended to be adequate for five days, a secondary battery is available for inclusion in packs to extend operation over another four nights.

The plastic casing of the generator and lamp-housing prevent damage when the beacon is packed with an inflatable life-raft. As protection against total immersion, the base of the lamp-housing and the complete generator unit are impregnated with silicone rubber, which also provides a resilient mounting for the generator components and a thermal shunt for its transistors.

The beacon will operate from a suitable 6v. sea-water or nickel/cadmium battery instead of the mercury cell. The sea-water battery is not standard equipment, however, because FLACON is intended for use under all conditions of distress (for instance, in deserts or on mountains) and not only at sea. The mercury cell's storage life is about five years without appreciable loss of performance.

To operate FLACON the generator unit is connected to the battery by means of the waterproof plug and socket provided. The beacon then functions automatically and emits a flash approximately every ten seconds. When search units are known to be approaching, the faster flash rate is selected by pressing a button on the generator unit to operate a micro-switch.

FLACON is now in production at the Woolwich works of A.E.I. Telecommunications Division. It has aroused great interest in many quarters, including the Air and Transport Ministries, airlines, oil companies, desert and mountain rescue organisations, and so on. It is at present in use on two G.P.O. cable layers.

Railway Notes—

(*Continued from page 501*)

pal intermediate stations. Schedules have been cut by forty minutes or more in some cases and there are many more start-to-stop runs at well over the mile-a-minute average. The Western class 2,700 h.p. diesel-hydraulic locomotives have taken command, with speeds up to 90 m.p.h. officially forecast or expected in places. The diesel-electric, de-luxe *South Wales Pullman* is faster still.

My first experience of one of the new "flyers" showed that with a nine-coach train D1048 *Western Lady* had plenty in hand down to Swindon on the quickest-ever westbound booking of 72 minutes for the 77½ miles from Paddington. Even with two extra slowings, she arrived two minutes early; 75 miles from the start were covered in 65 minutes and the average speed was 80 m.p.h. for 47 miles, on the level or on slightly-rising gradients.

Round the Societies—

(*Continued from page 505*)

headquarters are as yet available, a new layout is, nevertheless, under construction. Each member is building a section of the layout, measuring 36 in. by 15 in. at his own home. Standardisation is the basis of the layout, and extends to every possible item, enabling a complete layout to be built even if only three or four members turn up on club night with their sections. The club is always ready to welcome visitors and prospective members. The age limit is 15 and the subscription five shillings a month. New members should contact the Hon. Secretary, Mr. R. A. Gingell, of 97 Leylands Road, Burgess Hill, Sussex.

Ten-Pin Bowling—

(*Continued from page 513*)

The first British centre was opened at Stamford Hill, London in January 1960, and now up to 50 or more centres are in full or almost full swing, with some 9,000 registered members.

Ten-pin bowling is for everyone, young and old alike, but as it grows in popularity let us remember it all began long, long ago with an Egyptian child playing with rough and ready skittles under the shadow of the Sphinx.

Road and Track—

(*Continued from page 497*)

of Earl Howe, who led the team that scored such a tremendous success. Later in the same year the great Tazio Nuvolari won the Tourist Trophy in one of these machines.

A road machine, often in saloon form, that gave many drivers their first taste of quicker motoring, was the tamer version known as the L type Magna. Last of the overhead camshaft engines was the PB, enlarged to 936 c.c. in 1936. It was a pity the firm dropped overhead camshaft engines after this model in favour of push-rod power units, the first of these being the 1292 c.c. TA which appeared in 1939.

Today, M.G. is part of the British Motor Corporation, which produced the 1½ litre M.G.A in 1955 and now has one of the world's finest sports cars in its class, the M.G.B. Recently the M.G. Midget has been revived and once more it is an extremely good, moderately-priced little sports car, but this time with a top speed around 90 m.p.h.

The present Managing Director of M.G. is John Thornley, a great enthusiast who has been with the firm since the early 'thirties, and has steered it through many triumphs. It is good to know he has some interesting ideas for the future.

Dinky Toys News—

(*Continued from page 515*)

vehicle being moved.

As I said earlier, both models will be on sale soon, so keep in touch with your local dealer.

Many complimentary things have been said about the Dinky Toys model of the Triumph Spitfire, which has a woman driver and a detachable safety belt. Among those who have offered their congratulations is Mr. R. A. Lovell, chairman of the National Automobile Safety Belt Association, who says, "One of the most important things this association has to do is to instil into the minds of the motoring public the wisdom of installing and wearing safety belts, and there is no better way of doing this than by educating the young in the habits they should form. Your excellent model should certainly do this."

Air News—(*Continued from page 517*)

springbok sign means happy rotoring".

BUILT TO BE SHOT AT

The Meteor aircraft shown in the lower illustration on page 517 looks so trim and businesslike that it is sad to think that it will spend its (probably short) life being shot at with guided missiles and other weapons. Yet, by offering a manœuvrable high-speed target for such weapons, the drone Meteors produced by Flight Refuelling Ltd. are playing a big part in perfecting the products of our missile industry.

This particular Meteor is the 100th target conversion of a Mk.8 fighter built by Flight Refuelling for the Ministry of Aviation. Ninety-two of these conversions have been to Meteor U.Mk.16 standard, for service at the Royal Aircraft Establishment, Llanbedr, North Wales. The eight others have gone to the Woomera Rocket Range as Meteor U.Mk.21s. Previously, Flight Refuelling built 91 U.Mk.15 drones, using old Meteor F.Mk.4 airframes.

Conversion of the aircraft into drones requires considerable structural modifications and the installation of much special equipment. In particular, the nose is lengthened by 30 inches to accommodate the radio control and automatic pilot.

In flight, the aircraft is "piloted" by a master controller in a mobile transmitting van on the ground. A camera system on the aircraft tracks the final stages of the missile's flight towards the target. Should the programme entail damaging or destroying the drone, the wingtip nacelles which contain the film records can be jettisoned and recovered by parachute.

The Meteors retain full normal cockpit equipment, enabling them to be test flown by a pilot in the usual way to ensure that everything works properly before they are sent up under remote control.

"Please hurry doctor . . . his dad's Christmas dinner's still in it."

New Books for Christmas—

(*Continued from page 510*)

in that city—which led to many other railway explorations in due course, and the development through various stages of a remarkable miniature railway.

How this home railway became something of an embarrassment to the privacy of the home, because of the number of visitors, so that it was ultimately disposed of, is told by the younger writer, himself a journalist, author and publisher. In his section of the book—Part II—he covers a wide field, from the West Country to the Highlands, from the Border Counties to Northern Ireland, making a survey of various areas with special reference to railway branch lines, and rural transport in general.

From these joint writings, the reader is given plenty of entertainment in the many-sided observations of two keenly-interested portrayers of the world of British railways from the turn of the century to date.

There are plenty of well-chosen illustrations, many of which are half-tone reproductions. There are sketches, or rather impressions, too, that help to give atmosphere to the well-assorted subject matter. Not a history in the usual sense, but a very readable addition to the library of the railway lover.

Miniature Train Formations—

(*Continued from page 524*)

dropped off first. But empty wagons must be employed between the engine and the brake van, and then again before the final brake van.

Or, again, there is the daily cement train on the Hatfield line, hauling a number of "Presflo" wagons which normally stay together as a complete train and, therefore, can have a brake van at both ends.

From this it will be seen that freight running is not just a collection of wagons on the end of a locomotive, but rather an interesting and practical miniature method of train running with an object in view.

Elementary Shunting—

(*Continued from page 525*)

similar to those described in this article, except that the oval would be used to enable the locomotive to couple on to the other end of the train. This, in fact, is the only way that this can be done without the aid of either a run-round or some other form of by-pass line.

If any reader would like me to describe further shunting movements from time to time in the pages of the *Meccano Magazine*, please send a postcard to "Linesman", c/o *Meccano Magazine*, Binns Road, Liverpool 13.

Calling All Bus Spotters—

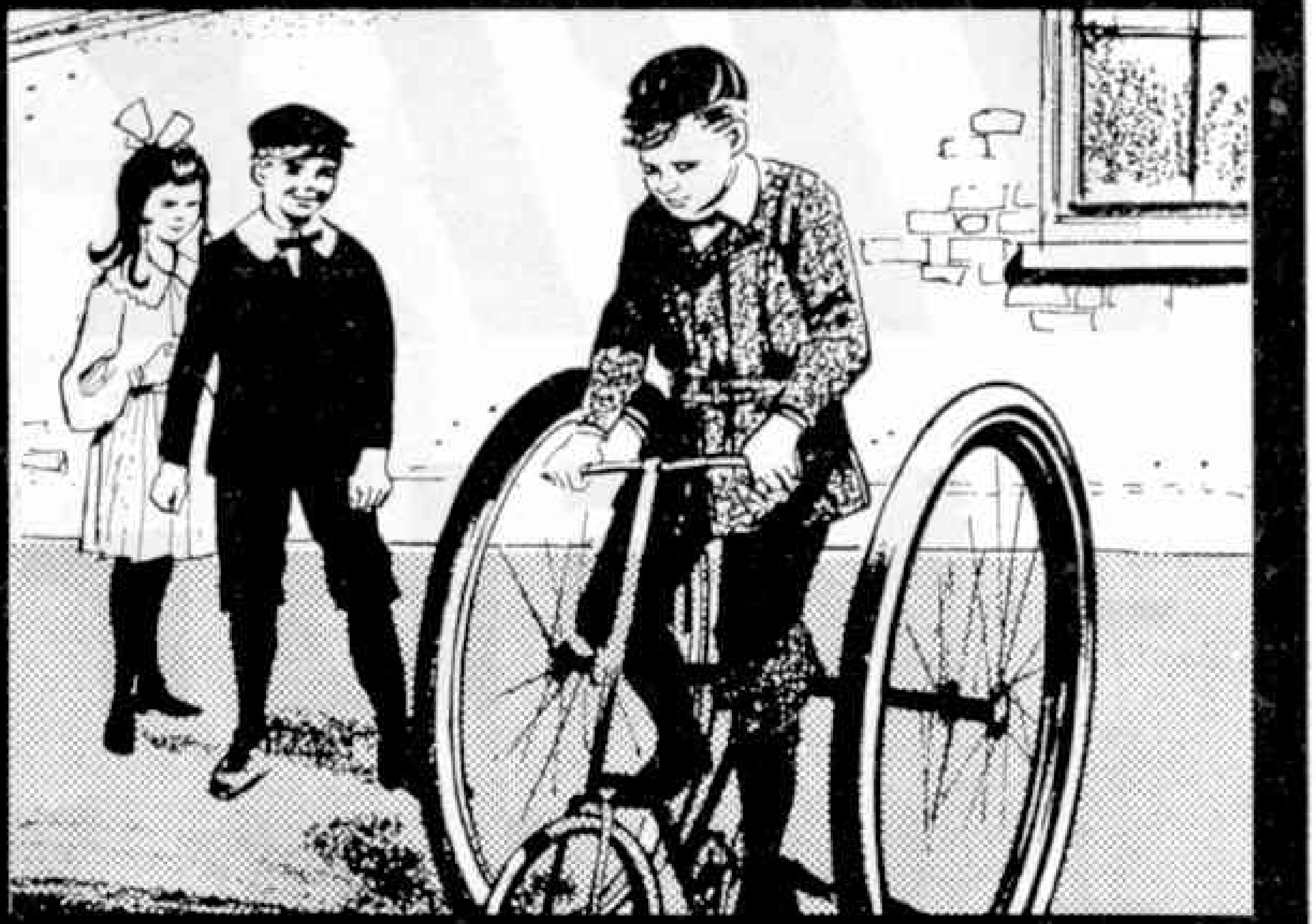
(*Continued from page 532*)

half) and dark green (lower regions). This is now owned by Warner Motors Ltd. of Tewkesbury, who run a fleet of 33 double-deckers and 20 coaches on mainly contract and private hire work, but do work a stage carriage route from their base to Strensham, and a circular via Bushley or Chaceley.

Another private hire firm, in Cheltenham itself, is R. S. Marchant of 433 High Street. Here I was kindly shown round their garage, where I saw three ex-Eastbourne Corporation Crossley DD42 double-deckers with East Lancs. bodies (JK 9993/5/6), MTE 73 (a Maudsley "Marathon III" with a C37F body), XNY 347 (Bedford SB/Duple C41F), 510 FAE and 9304/5 AD (Bedford SB/Plaxton C41F) and XDD 194/5 (A.E.C. "Reliance"/Duple C42F).

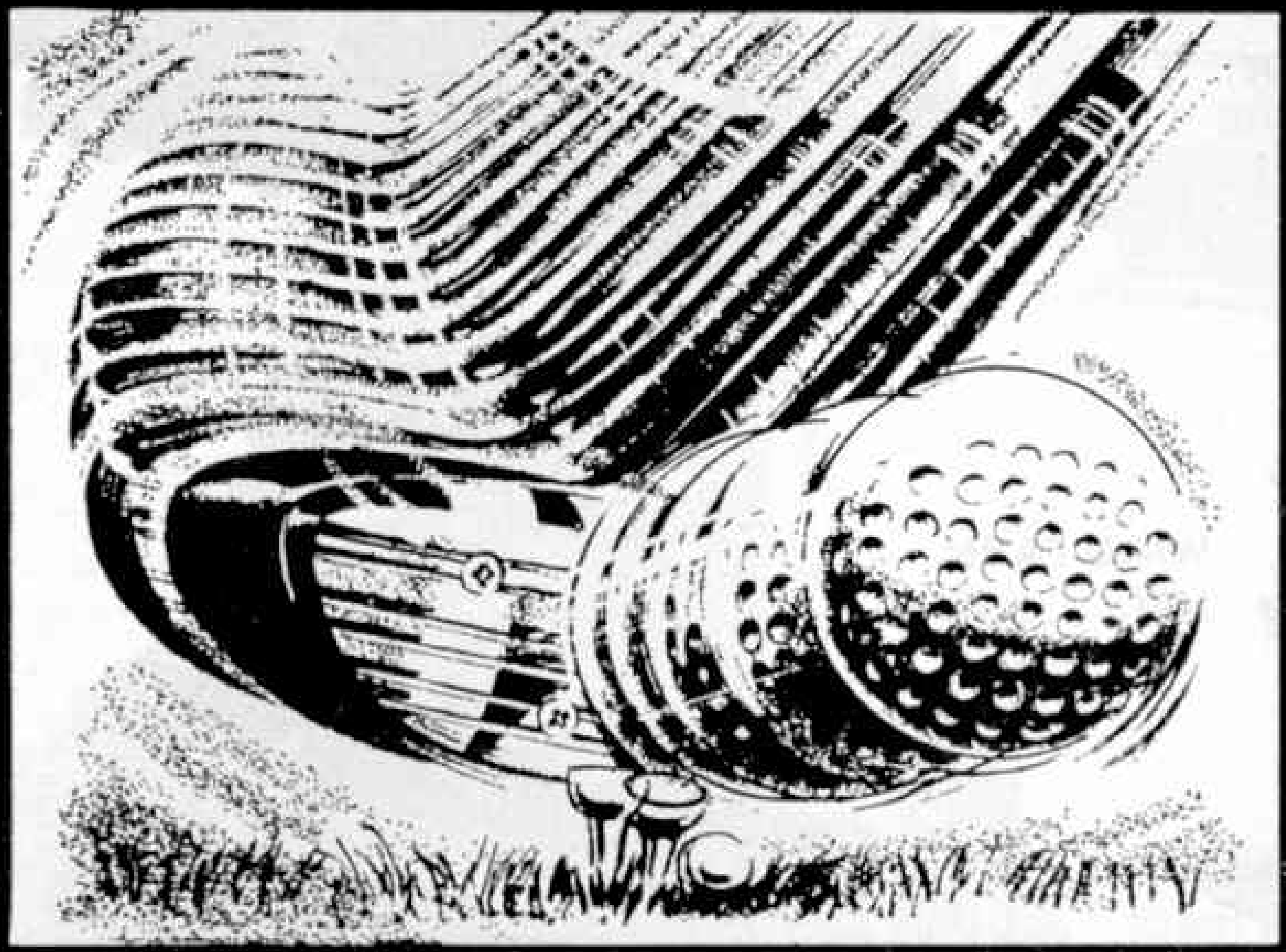
I trust that I have whetted your appetite to visit colourful Cheltenham!

well! WHAT D'YOU KNOW...



TYRE GIANT!
This enormous tyre, the Dunlop EV.90 Earthmover, stands nearly 8 ft. high, is nearly a yard wide and weighs 17 cwts, with a tread up to 2 inches thick! The latest in the big range of Dunlop industrial tyres, the EV.90 is built for the wheels of those monster machines called 'scrapers' which can scoop up, carry away and spread up to 20 cubic yards of earth at a time.

CYCLORAMA
It is just 75 years ago that John Boyd Dunlop patented the first practical pneumatic tyre. Following his first contraption of wood, sheet rubber and canvas, the inventor developed a tyre which proved successful on his son Johnny's tricycle. Contrast this with today's wonderful Dunlop cycle tyres. Progress has been so spectacular over the years that British cycle tyre manufacturers alone sell nearly 12,000,000 a year.



TEE TIME STORY
When a golfer drives off from the tee, the head of his club whams onto the ball at a speed of about 110 m.p.h. and with a force of about half a ton! The ball flies towards the green at something like 150 m.p.h., spinning at nearly 4,000 revolutions a minute. A good golfer can drive to a distance of over 200 yards in one stroke, particularly if he uses Dunlop clubs and the famous Dunlop '65' golf ball.

BRAKES ACCELERATE PROGRESS!
When a racing car corners, quick safe braking saves valuable seconds. On the revolutionary Rover-B.R.M. gas turbine car, which won the special award at this year's Le Mans Grand Prix at an average speed of 107.8 m.p.h., the Dunlop disc brakes had to bear the brunt of cornering control, because this car has no gears! Rival drivers in this tough race were amazed at the way the Rover-B.R.M. beat them in cornering.

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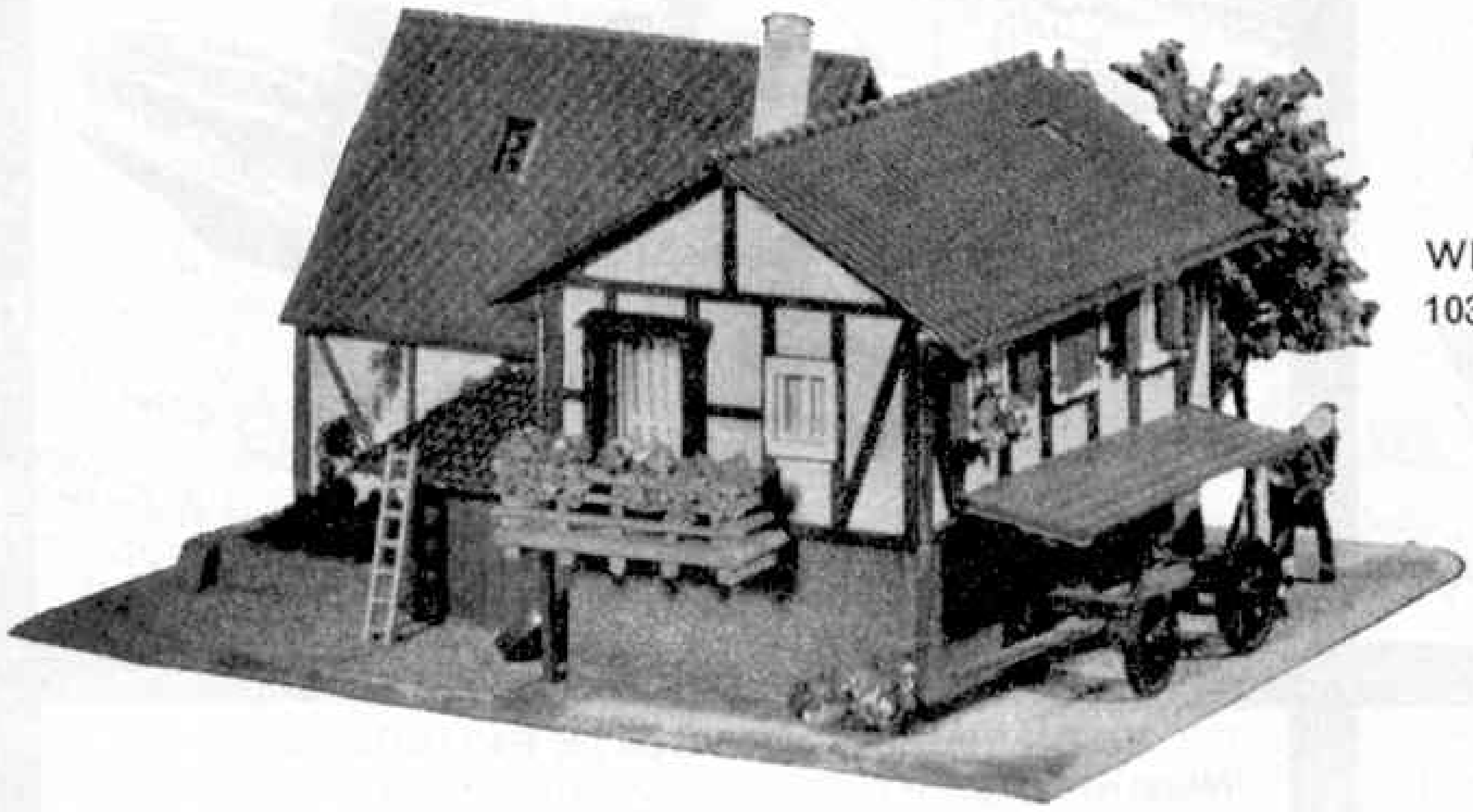
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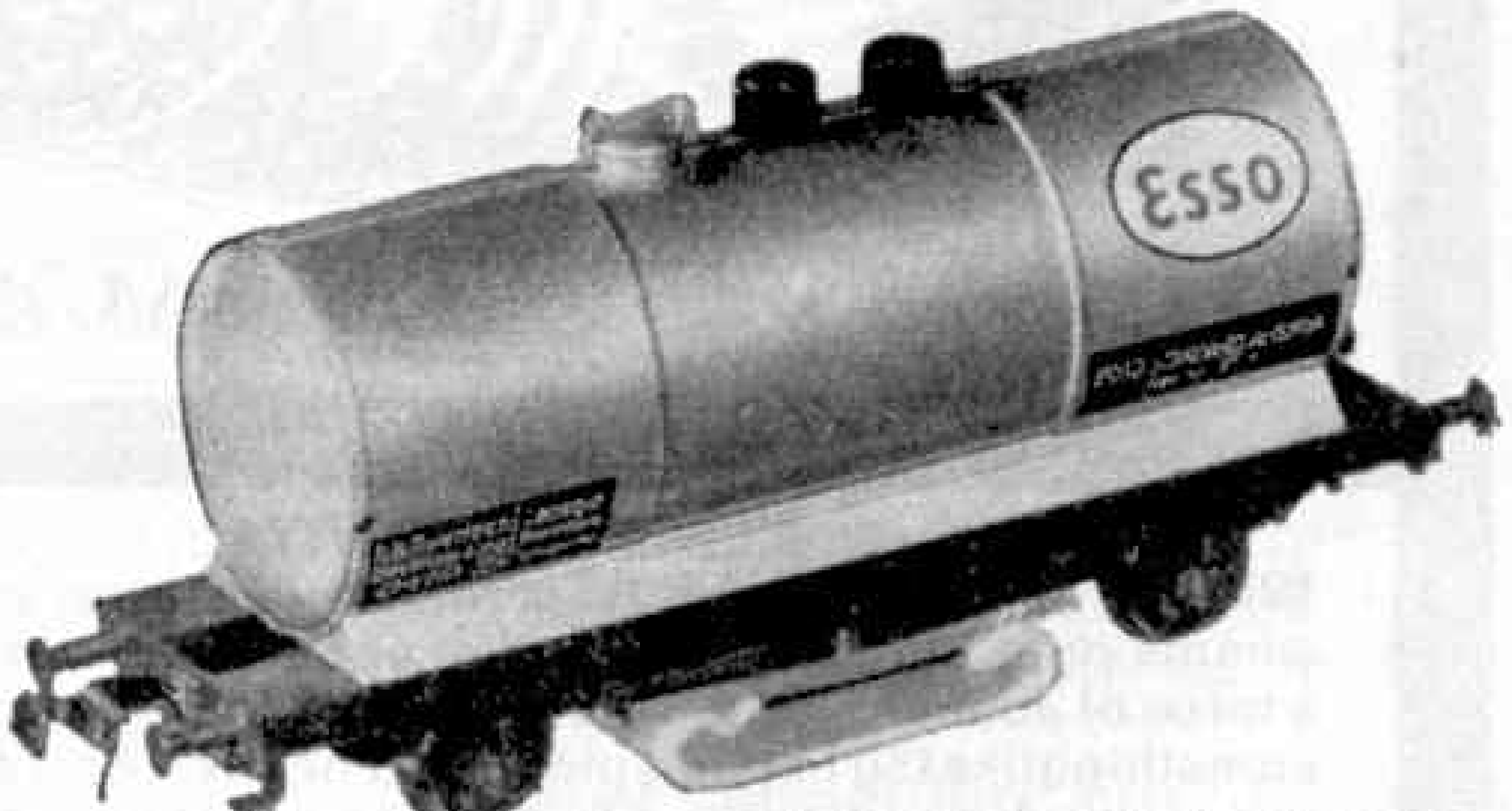
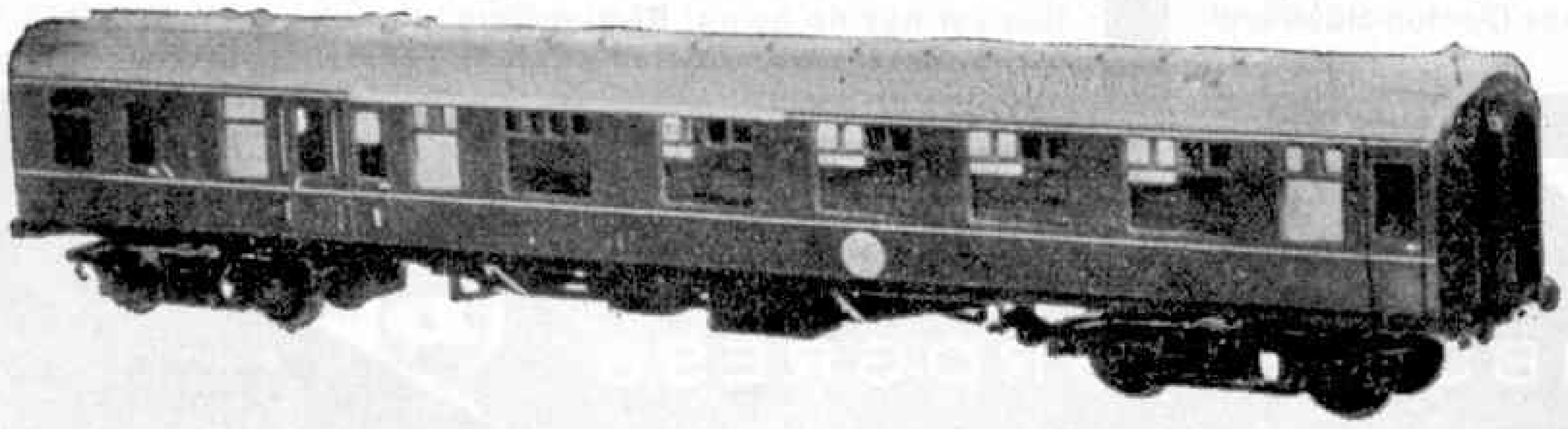


TRIX TRACK CLEANING
WAGON.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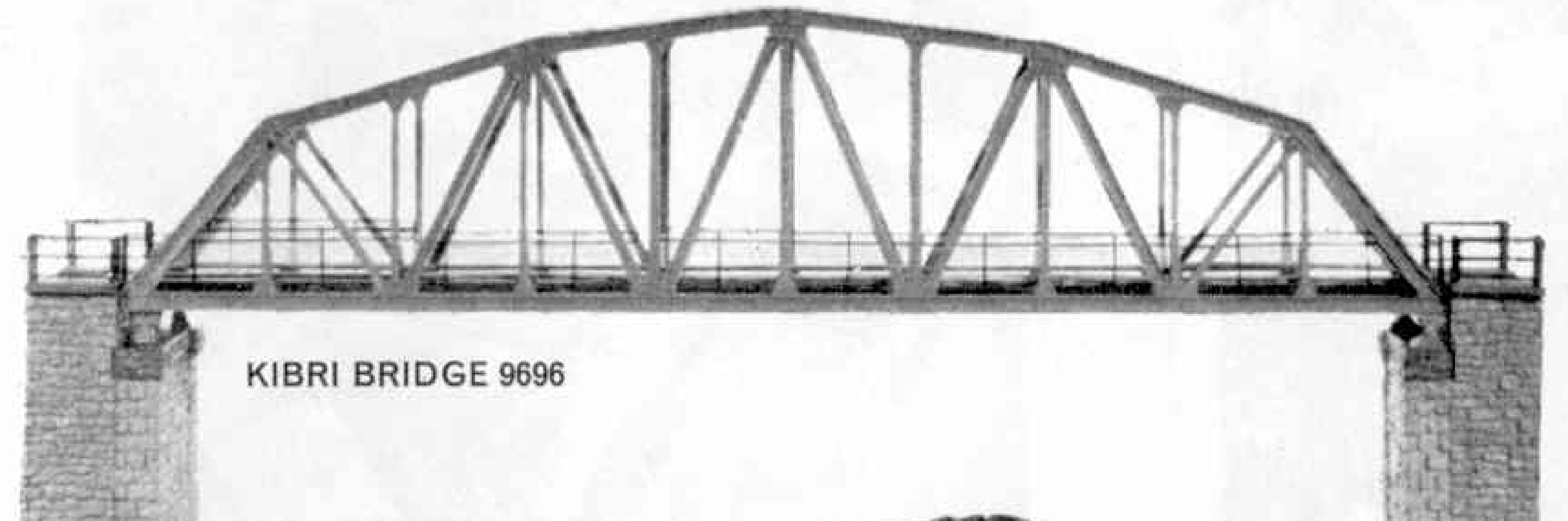

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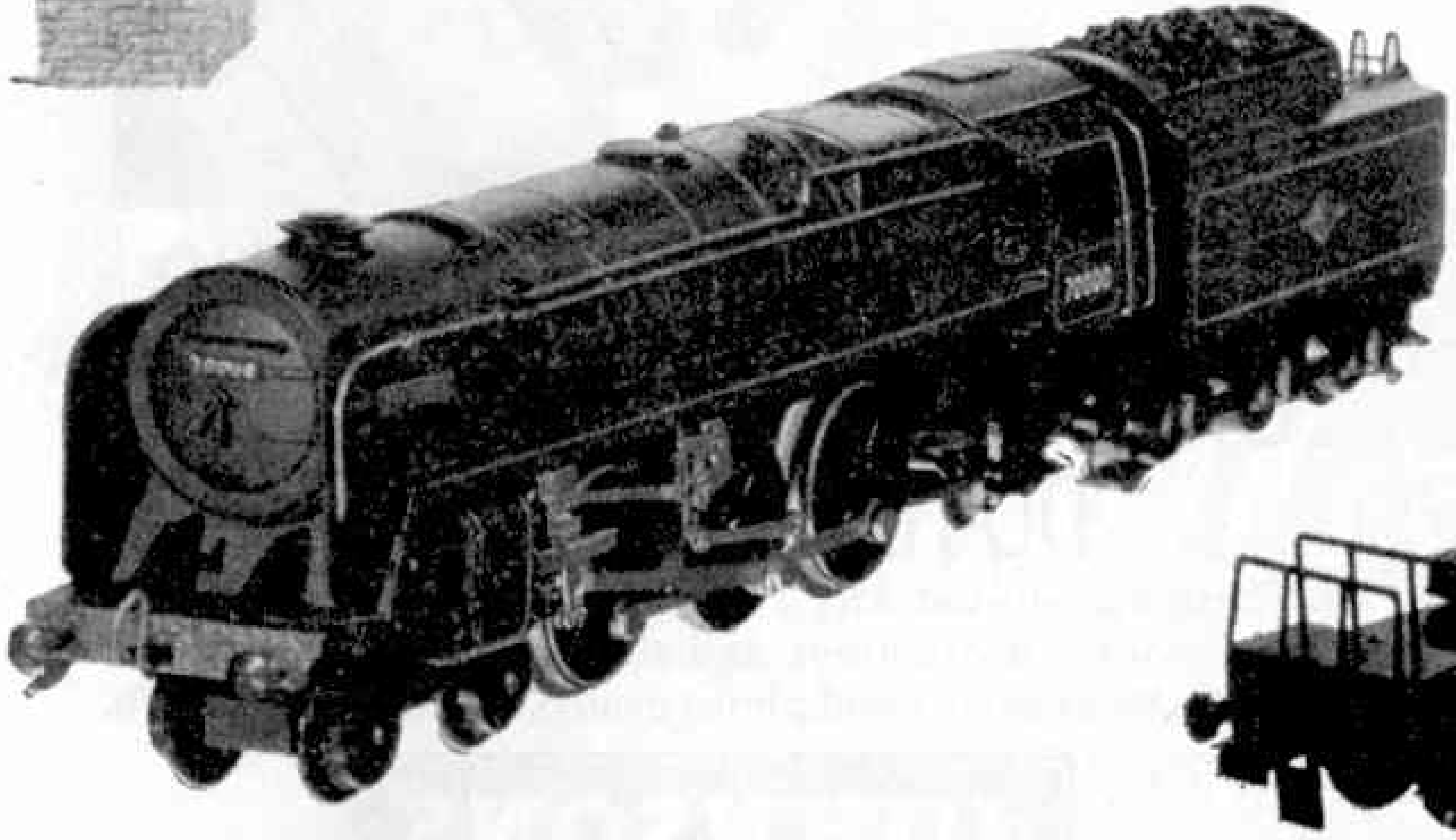
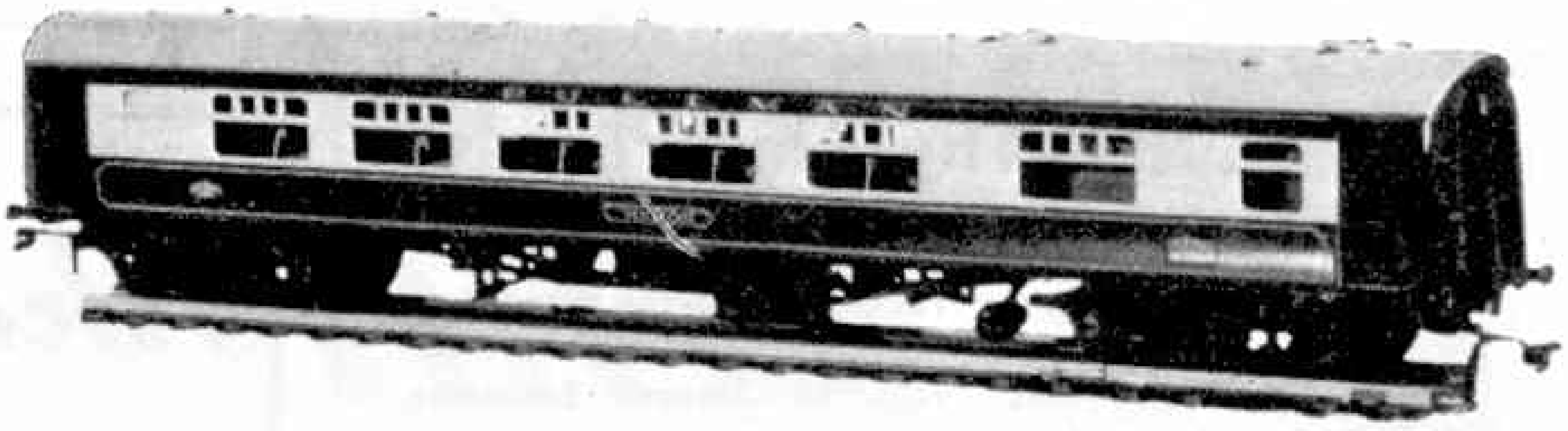


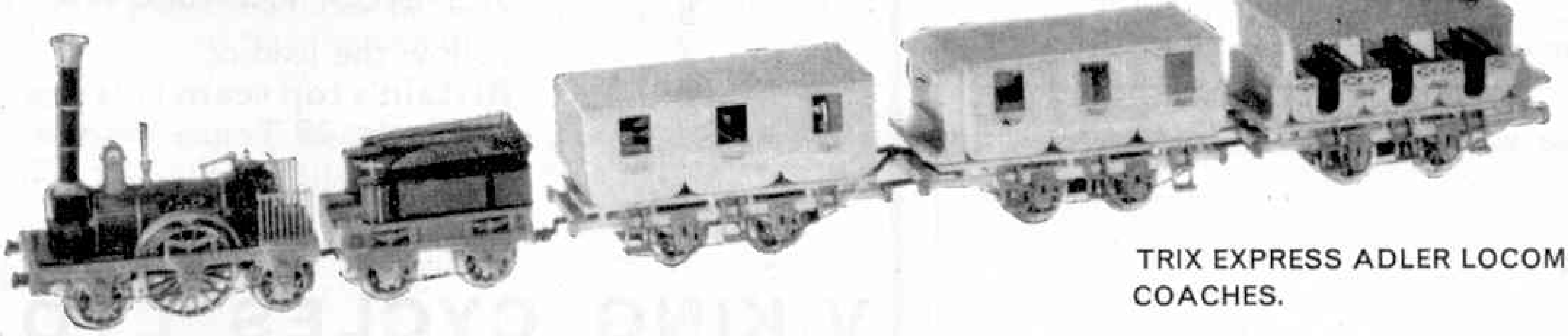
TRIX BRITANNIA LOCOMOTIVE.

TRIX EXPRESS TRANSFORMER WAGON 497.



TRIX PULLMAN COACH.

KIBRI ESSO STORAGE TANK.



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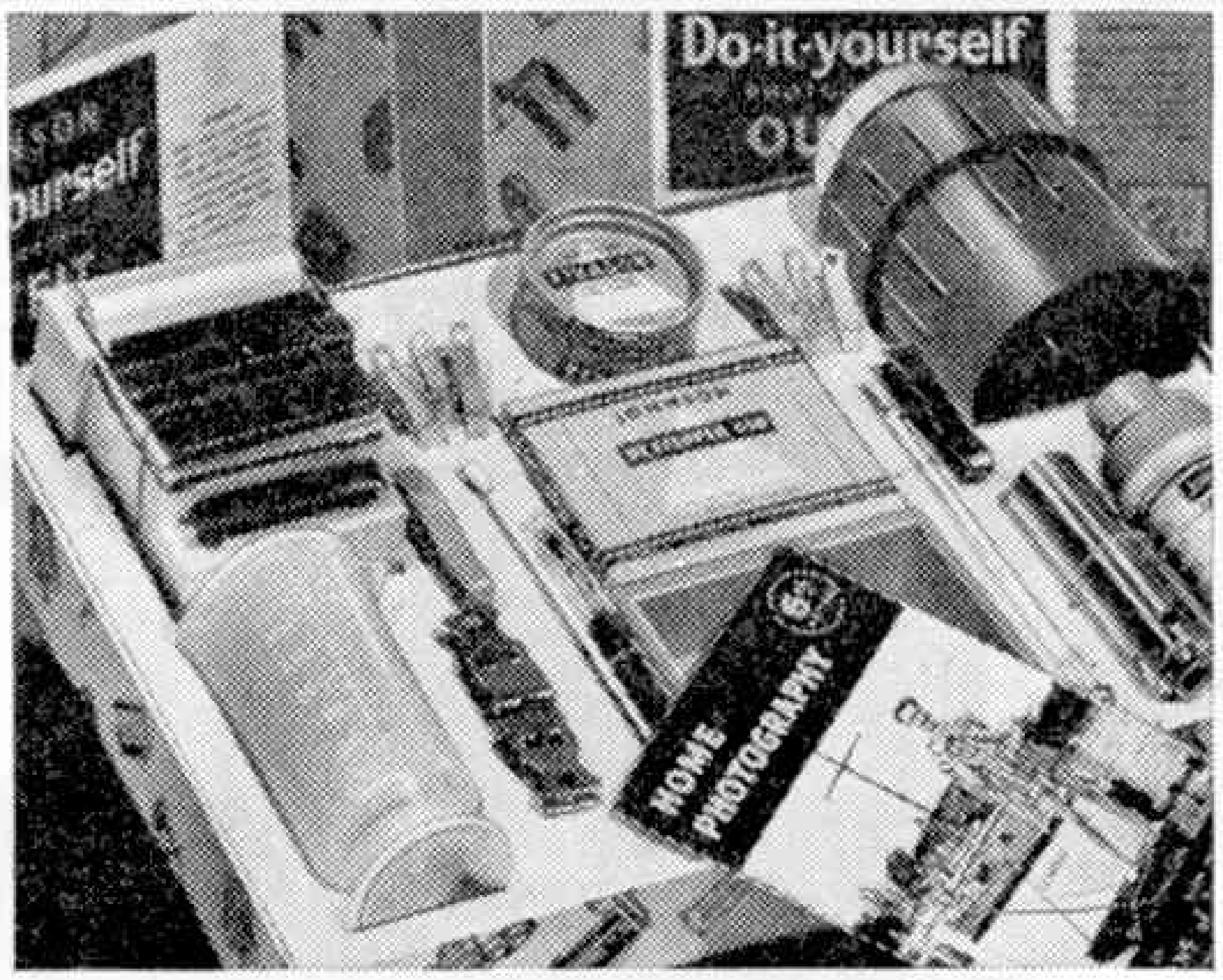

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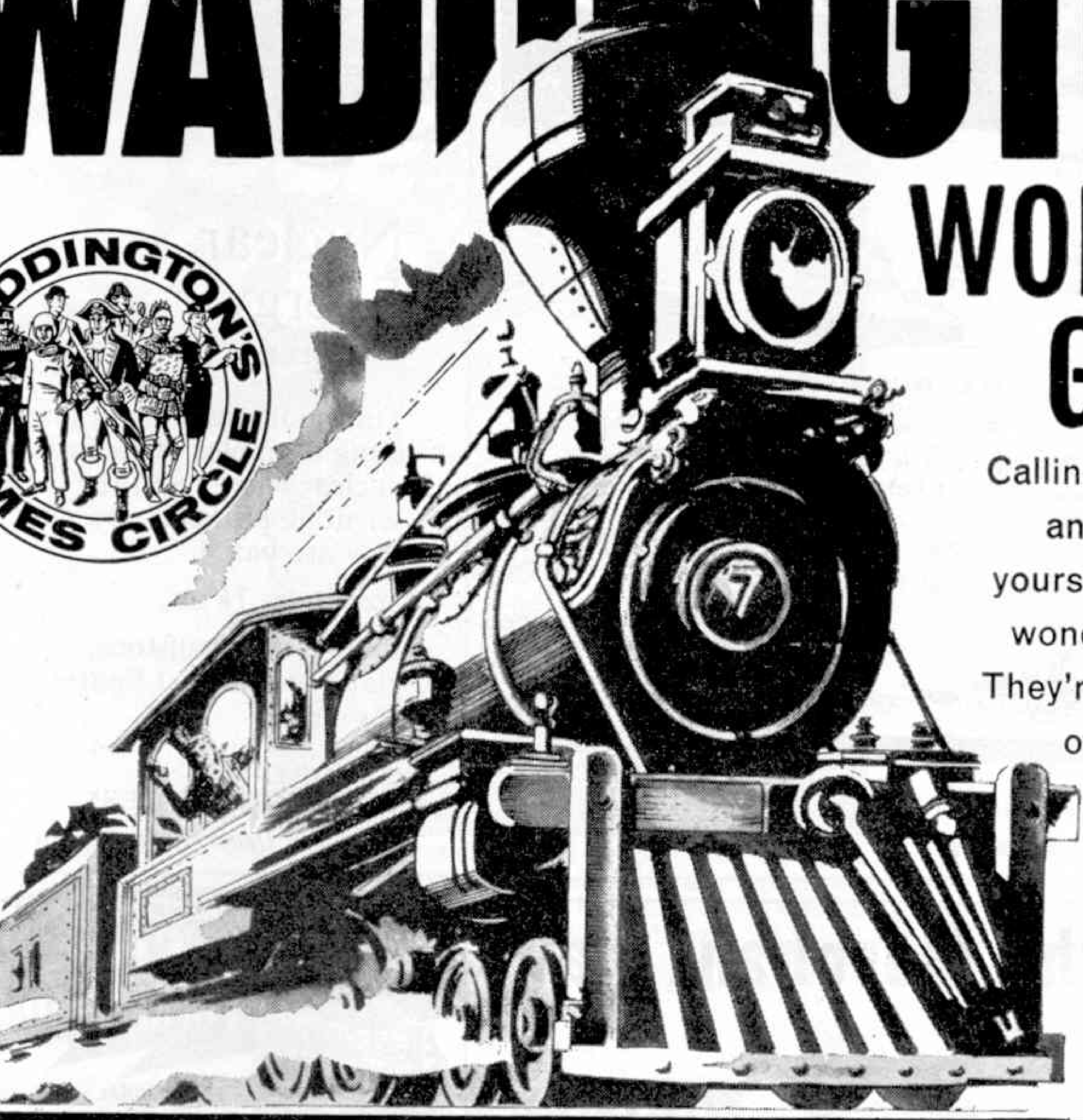

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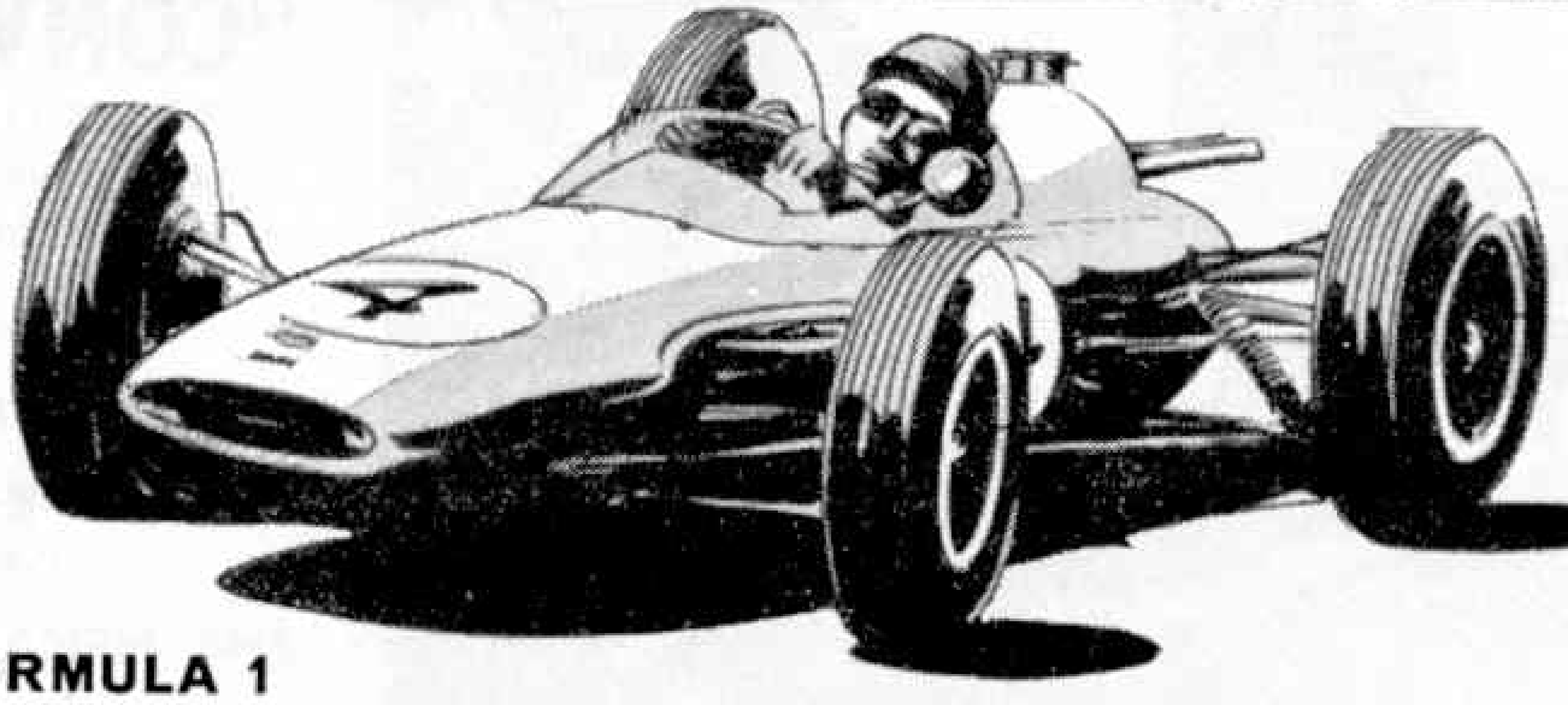

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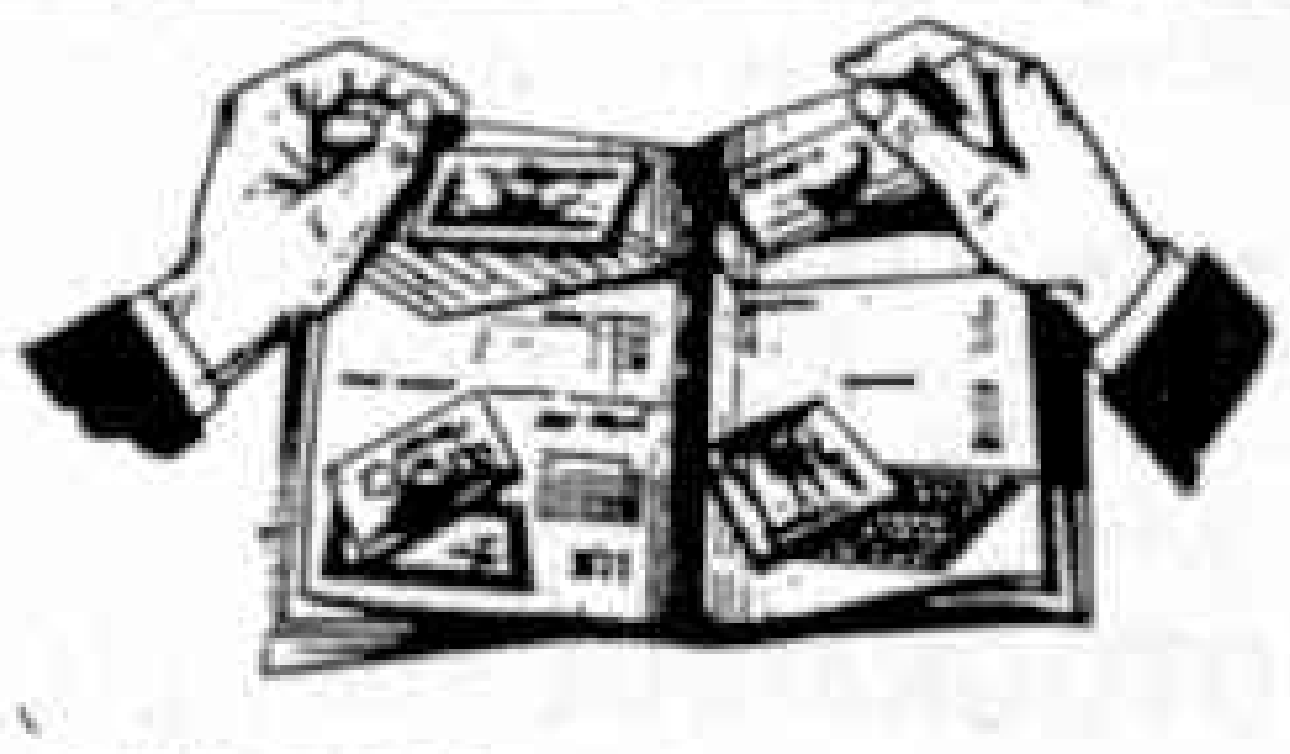

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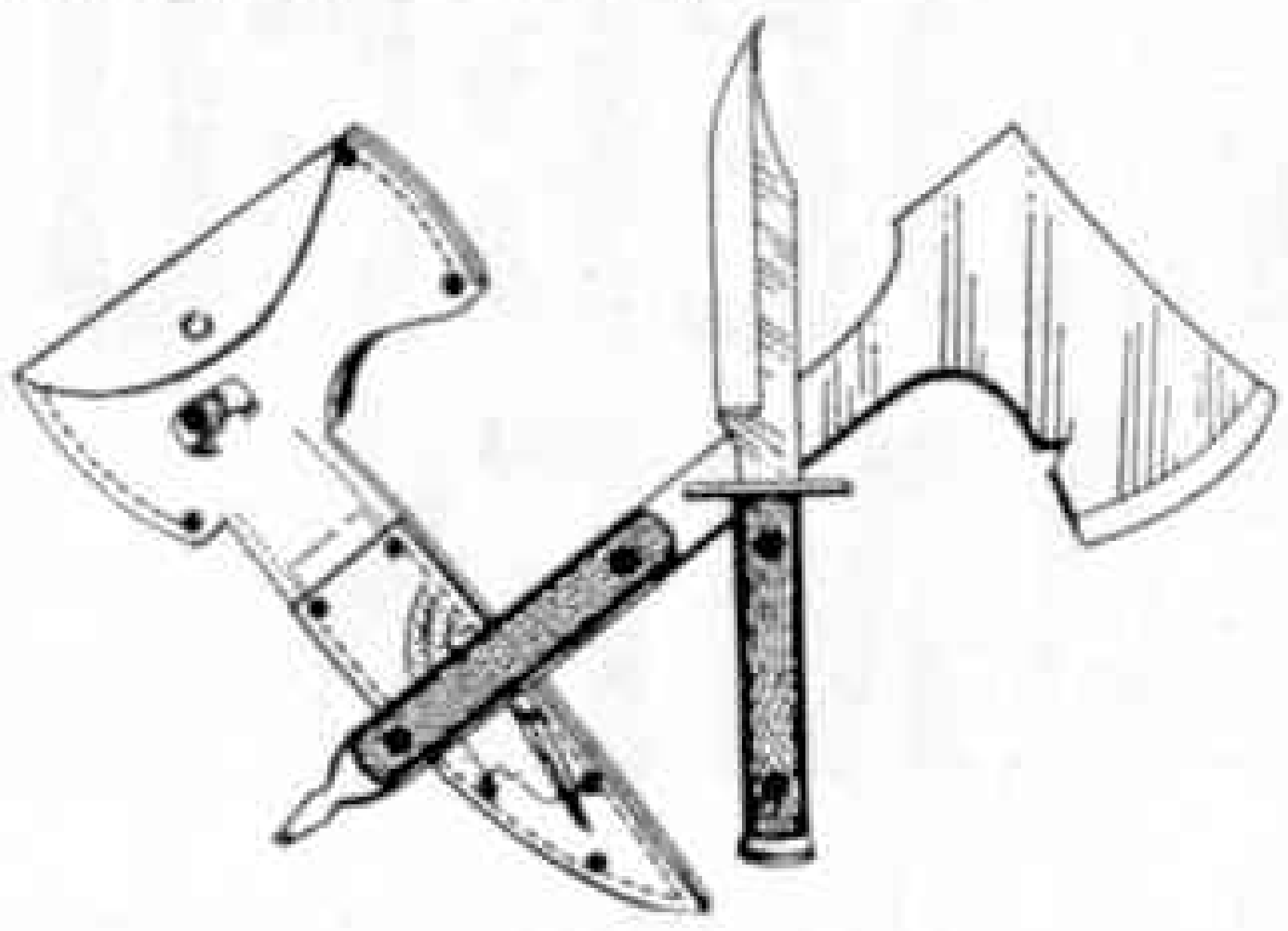

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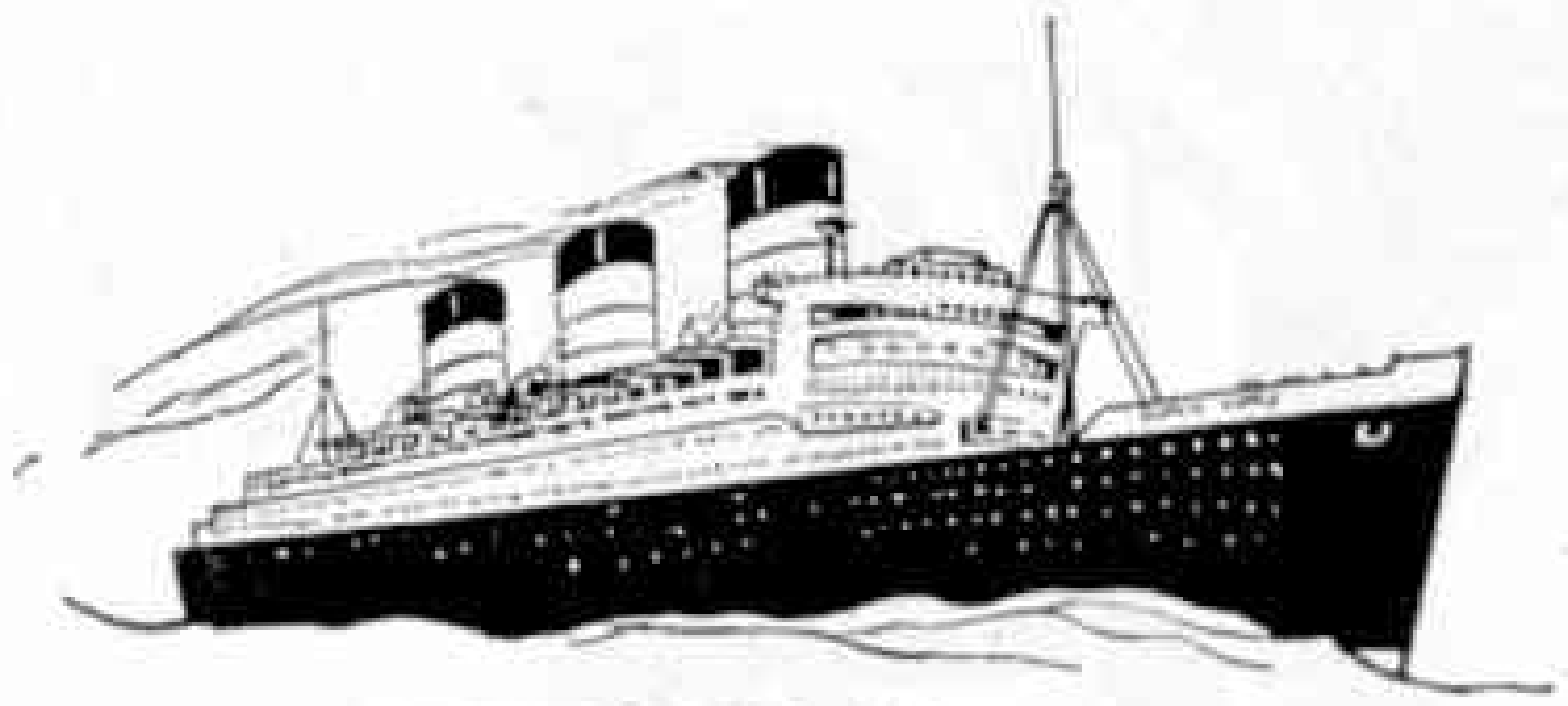

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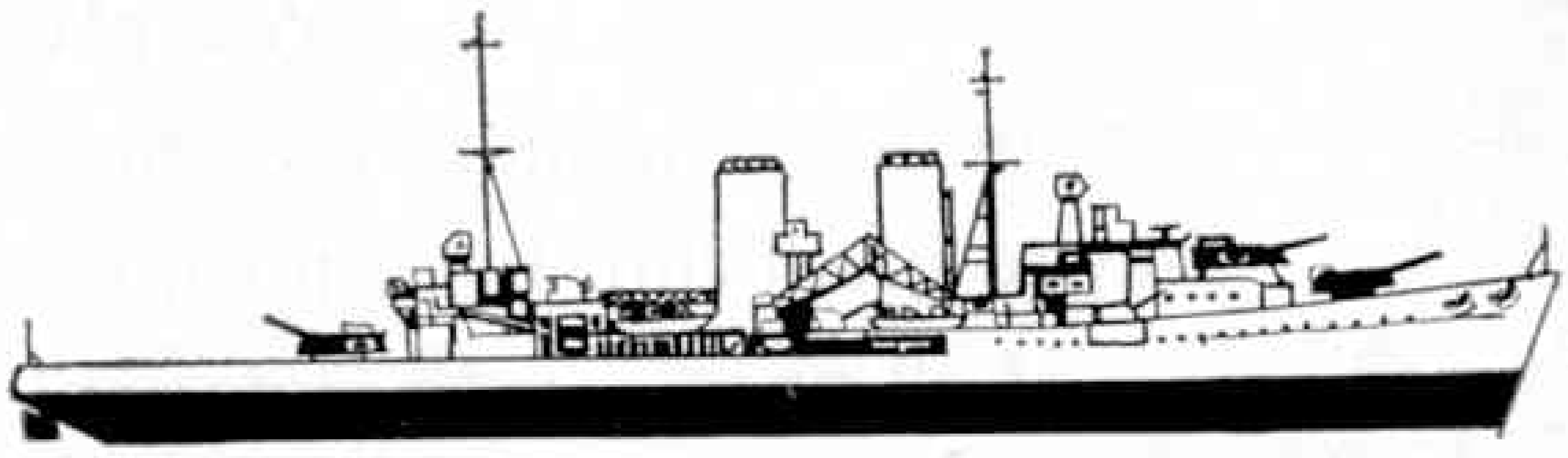

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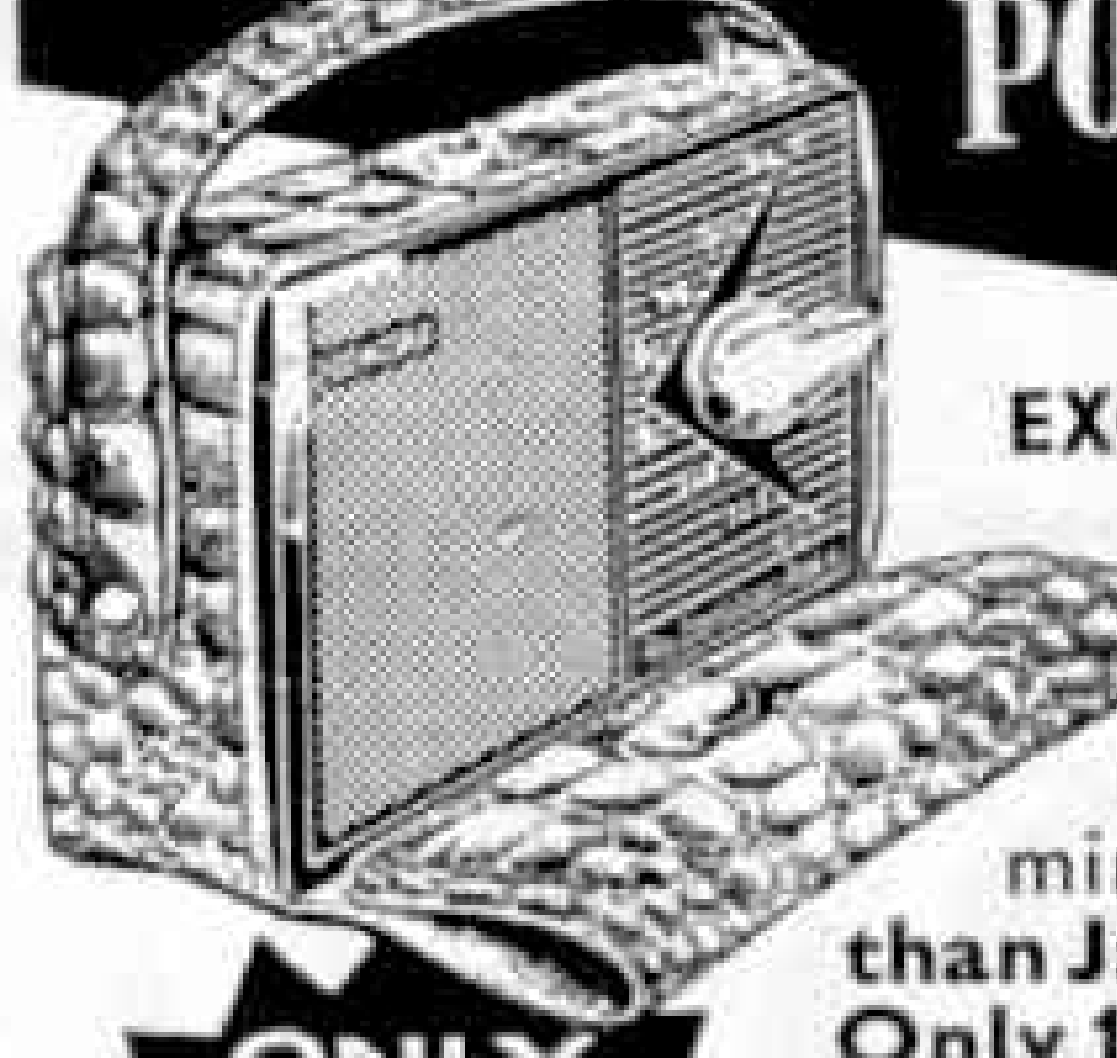

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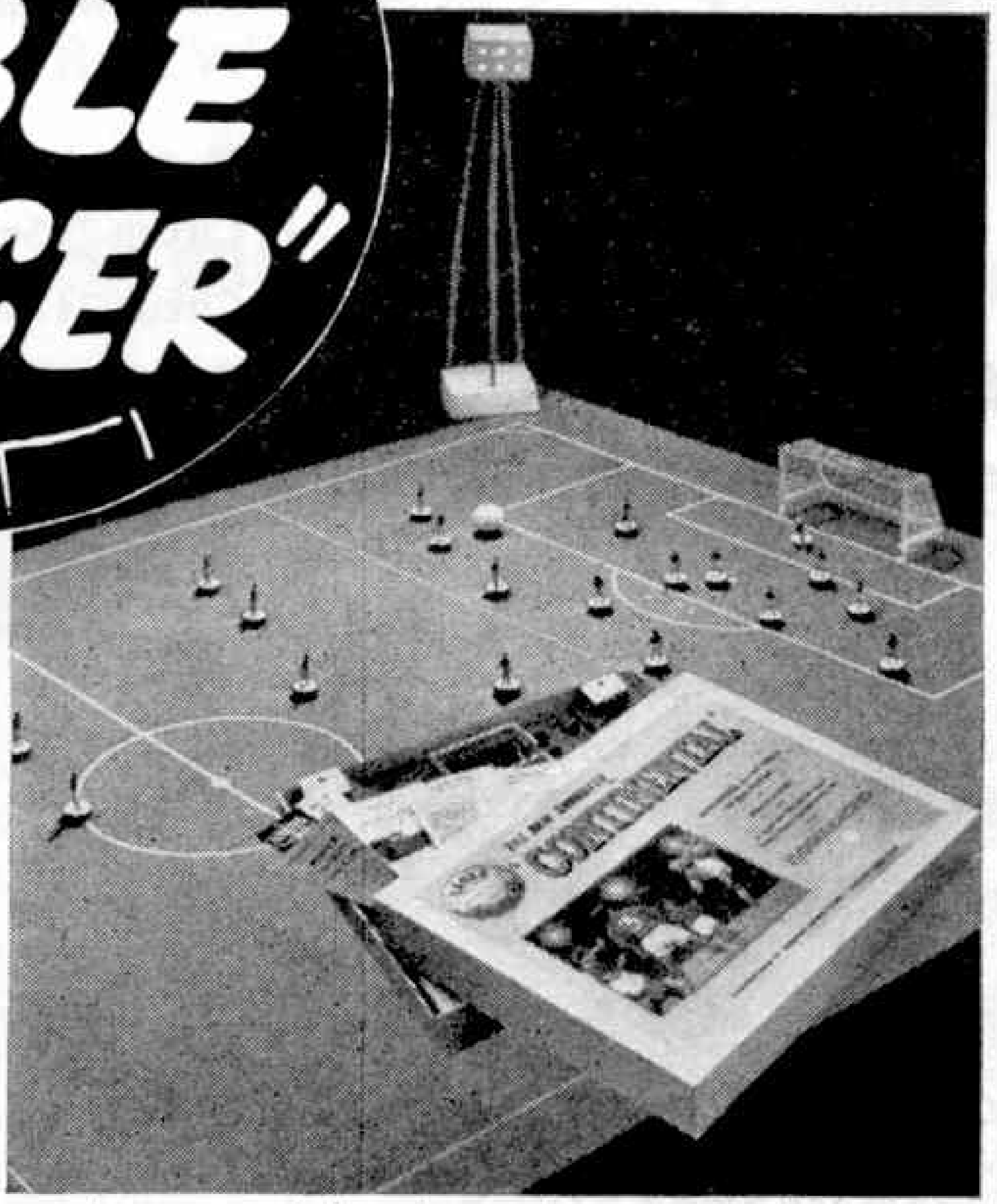

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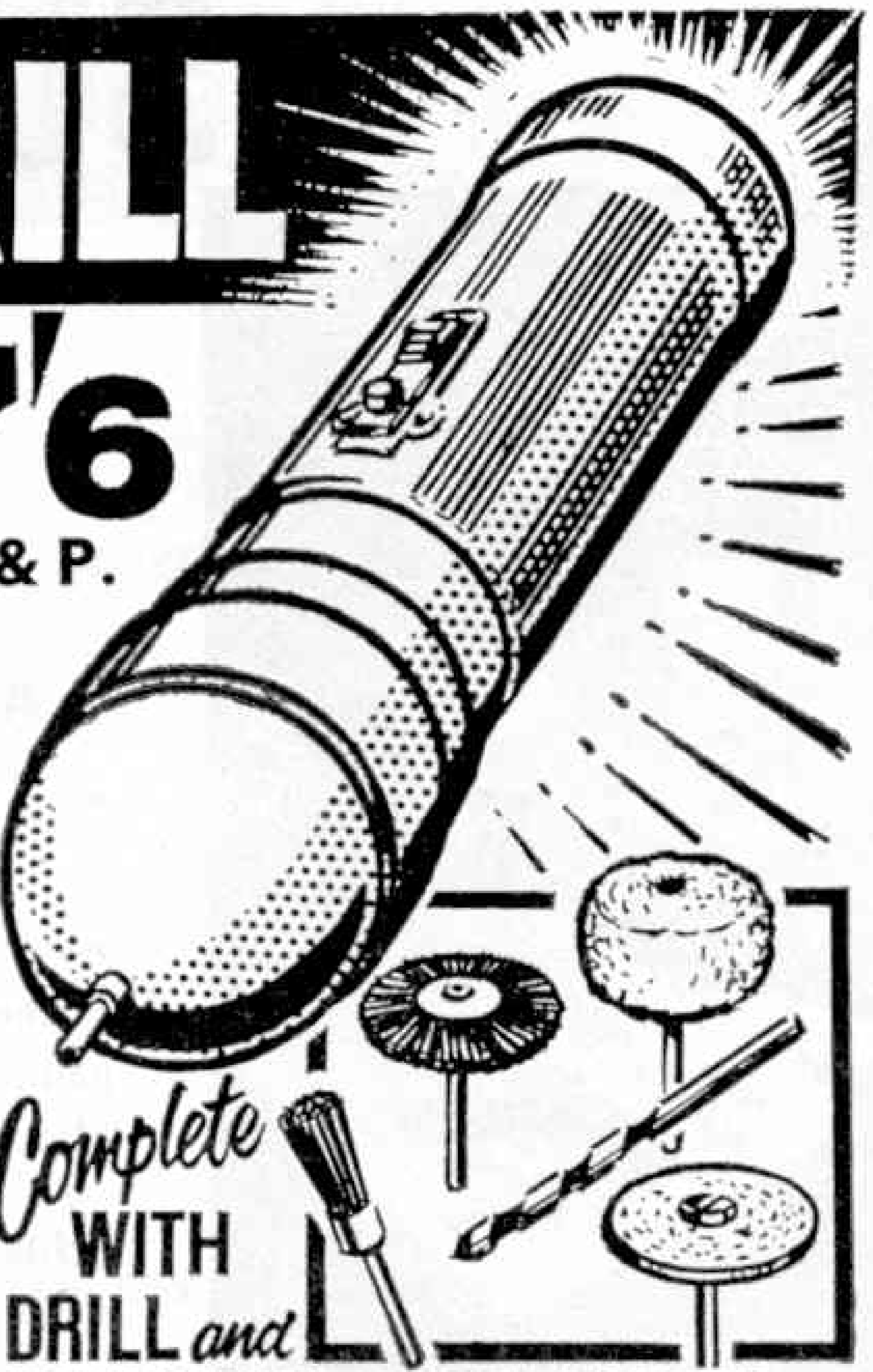

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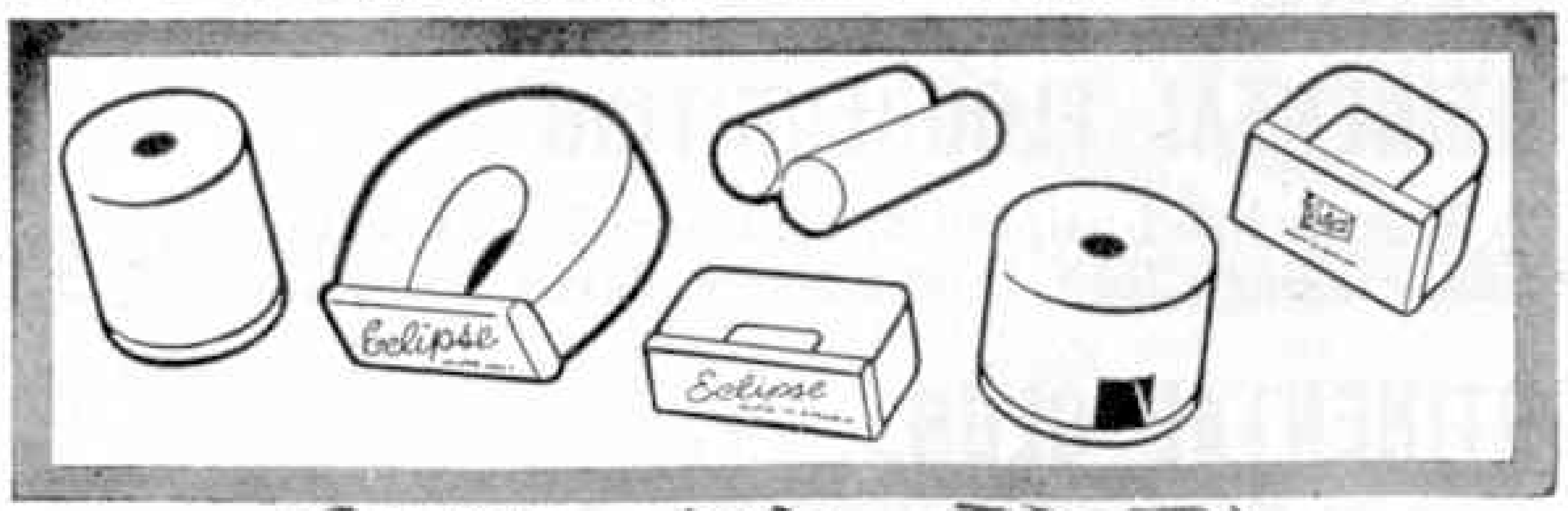

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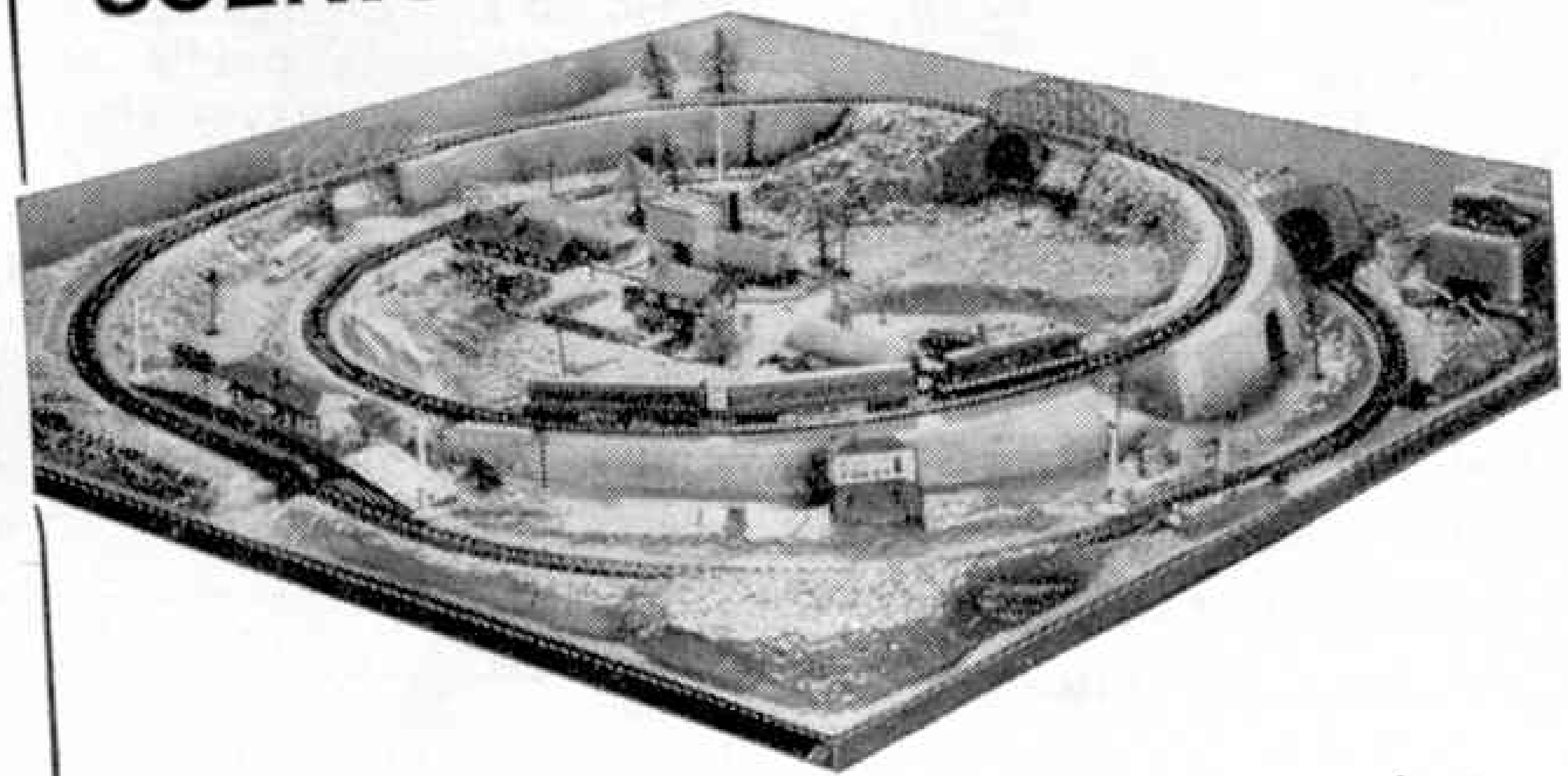

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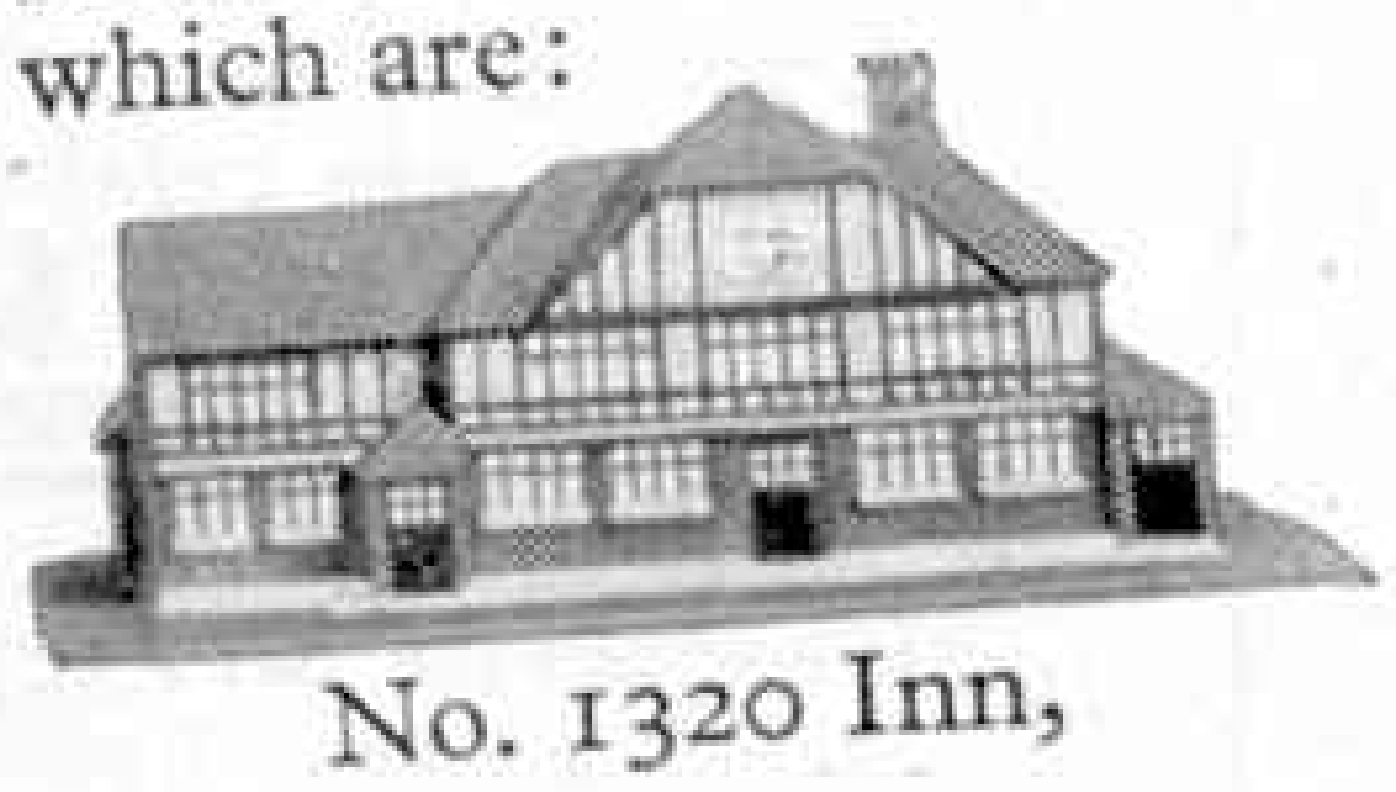

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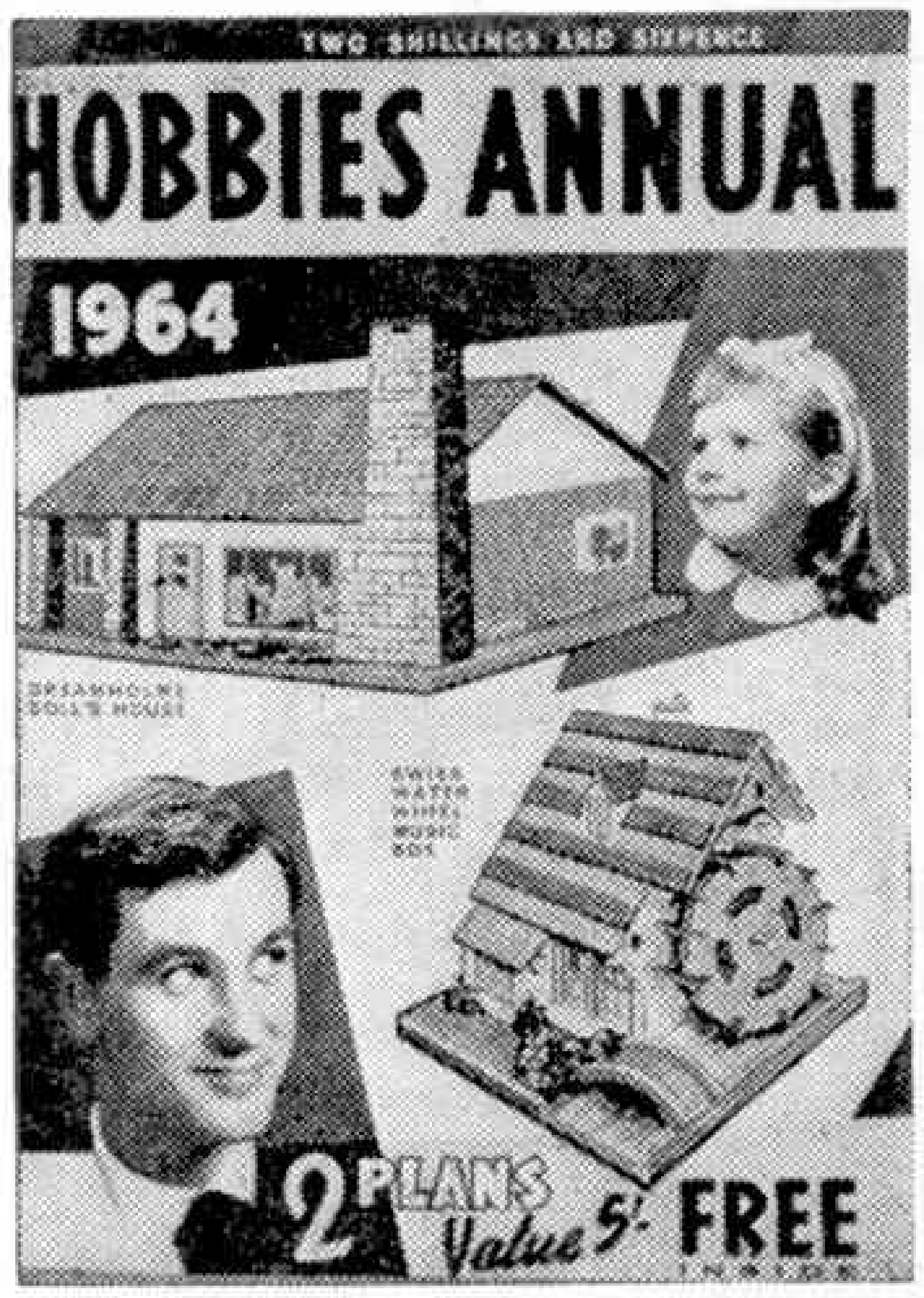
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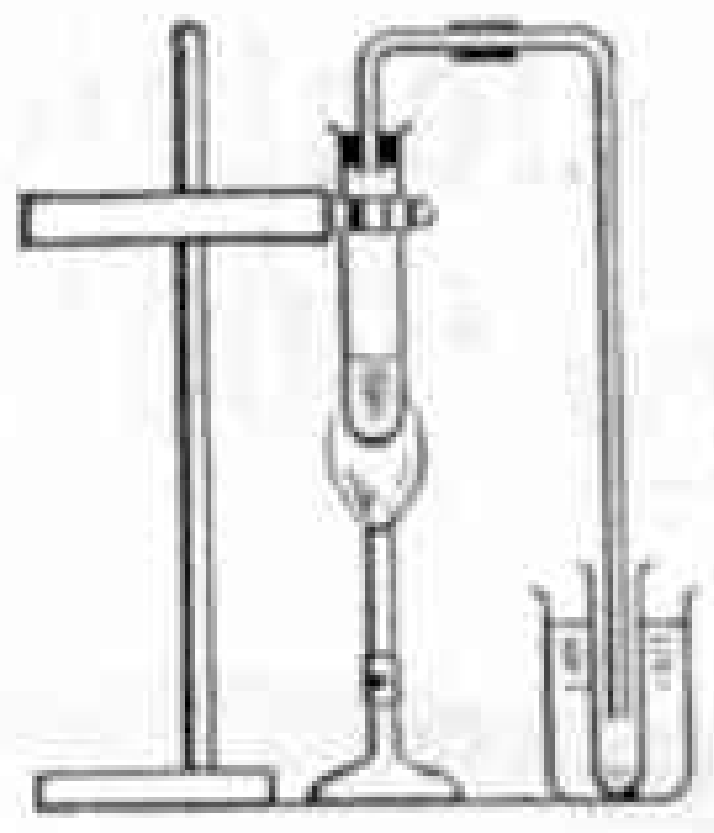

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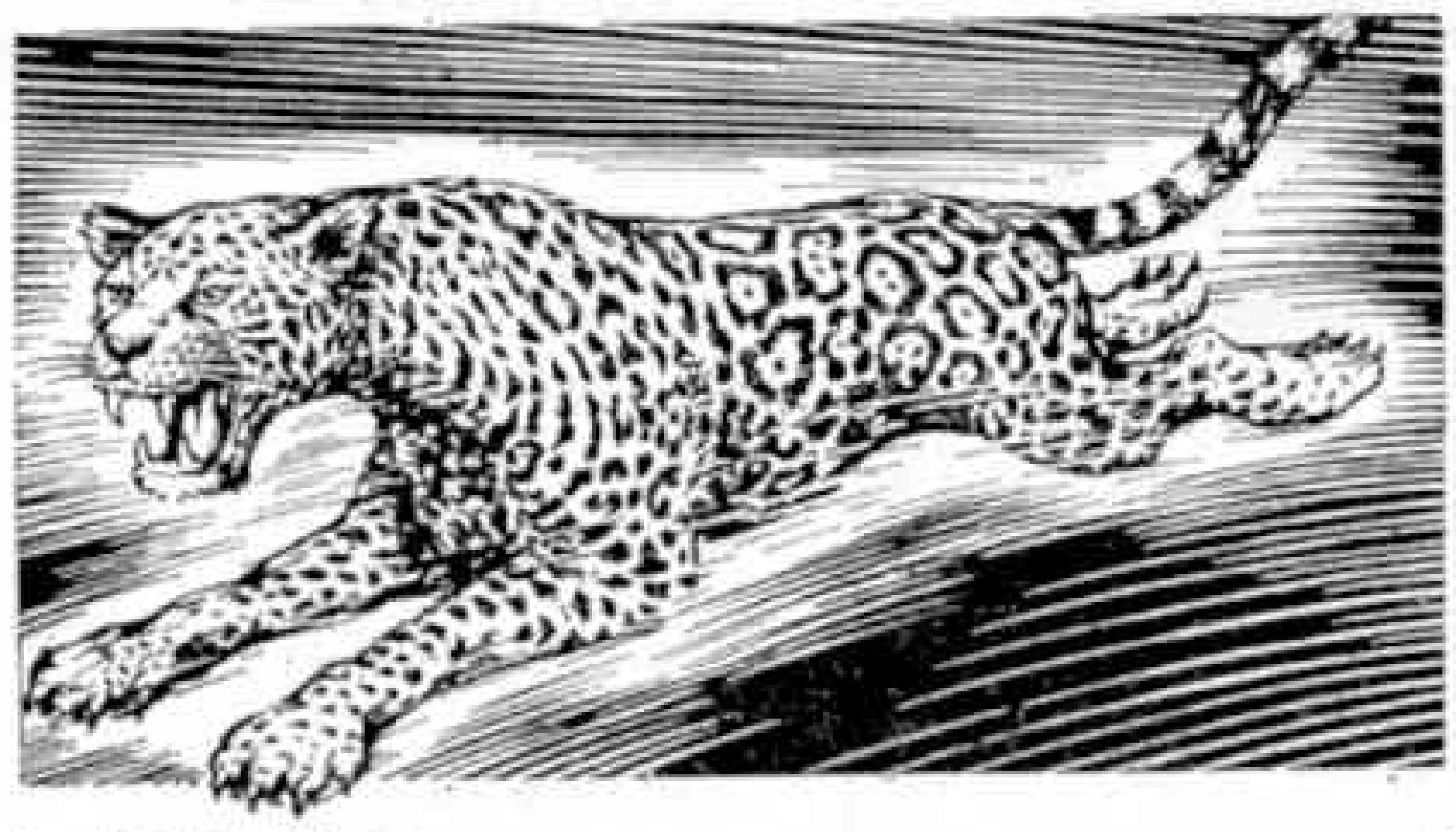

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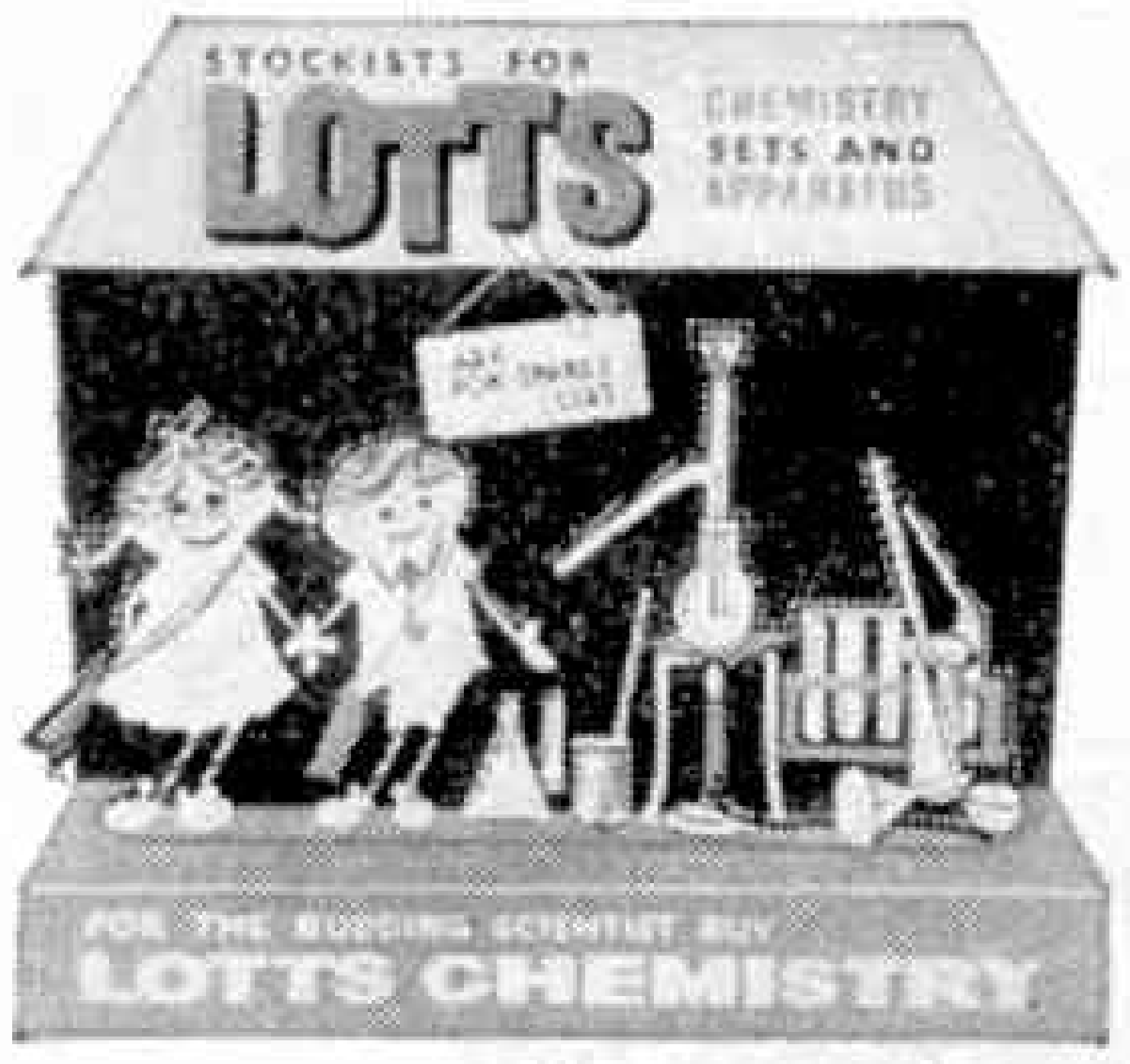

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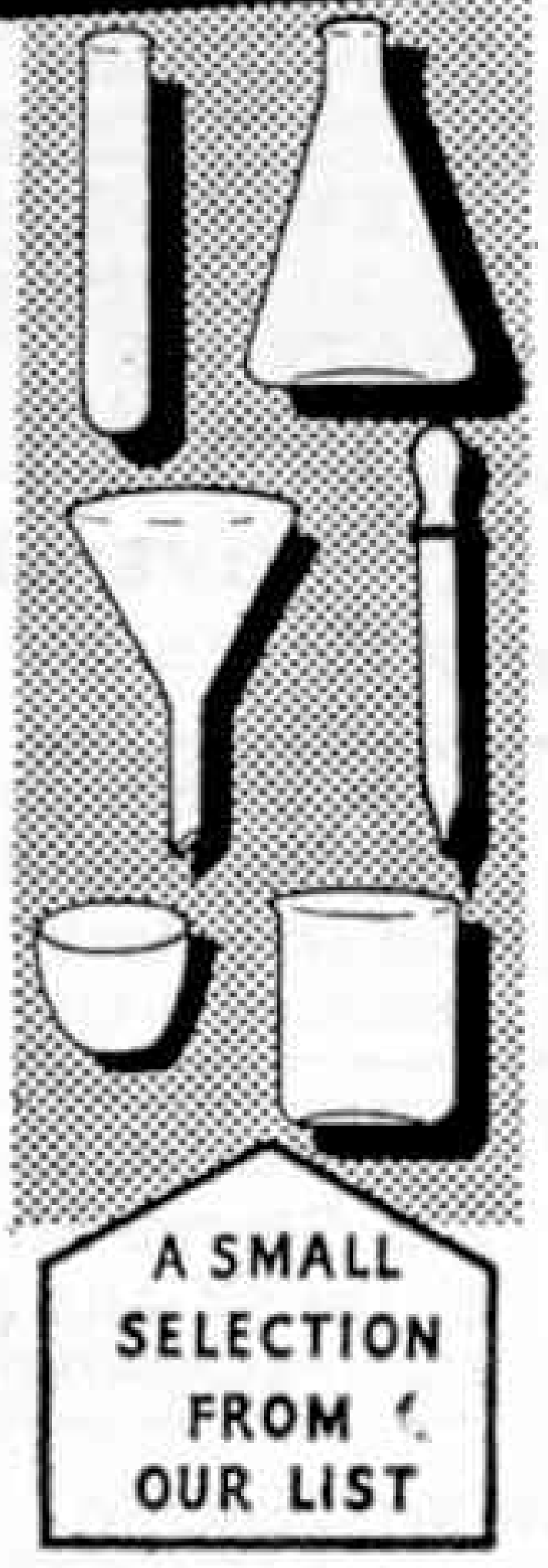
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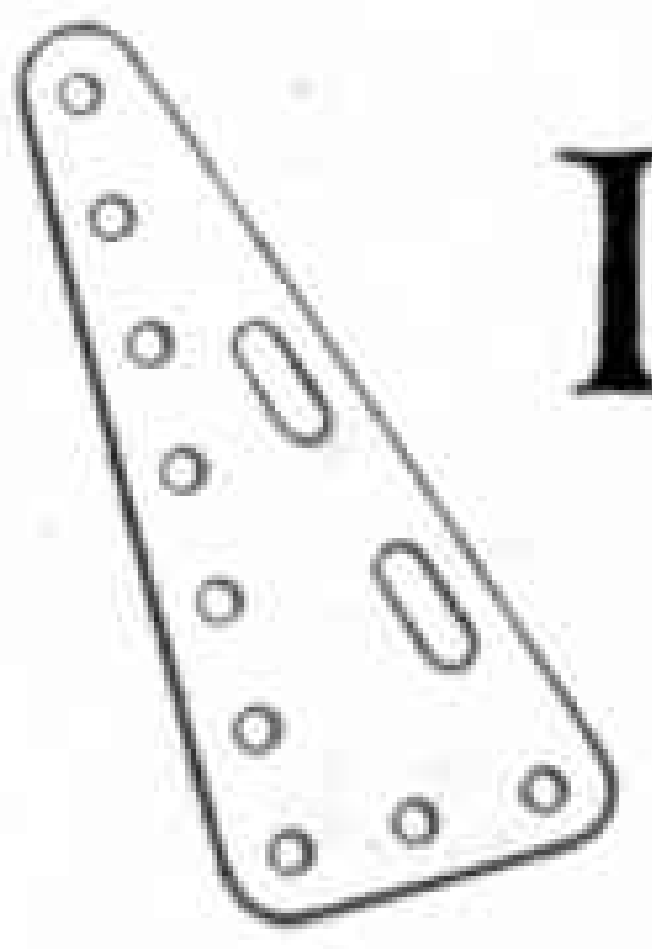

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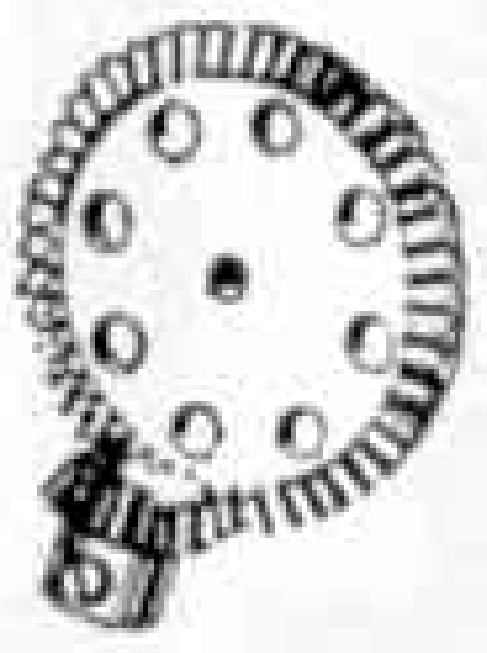

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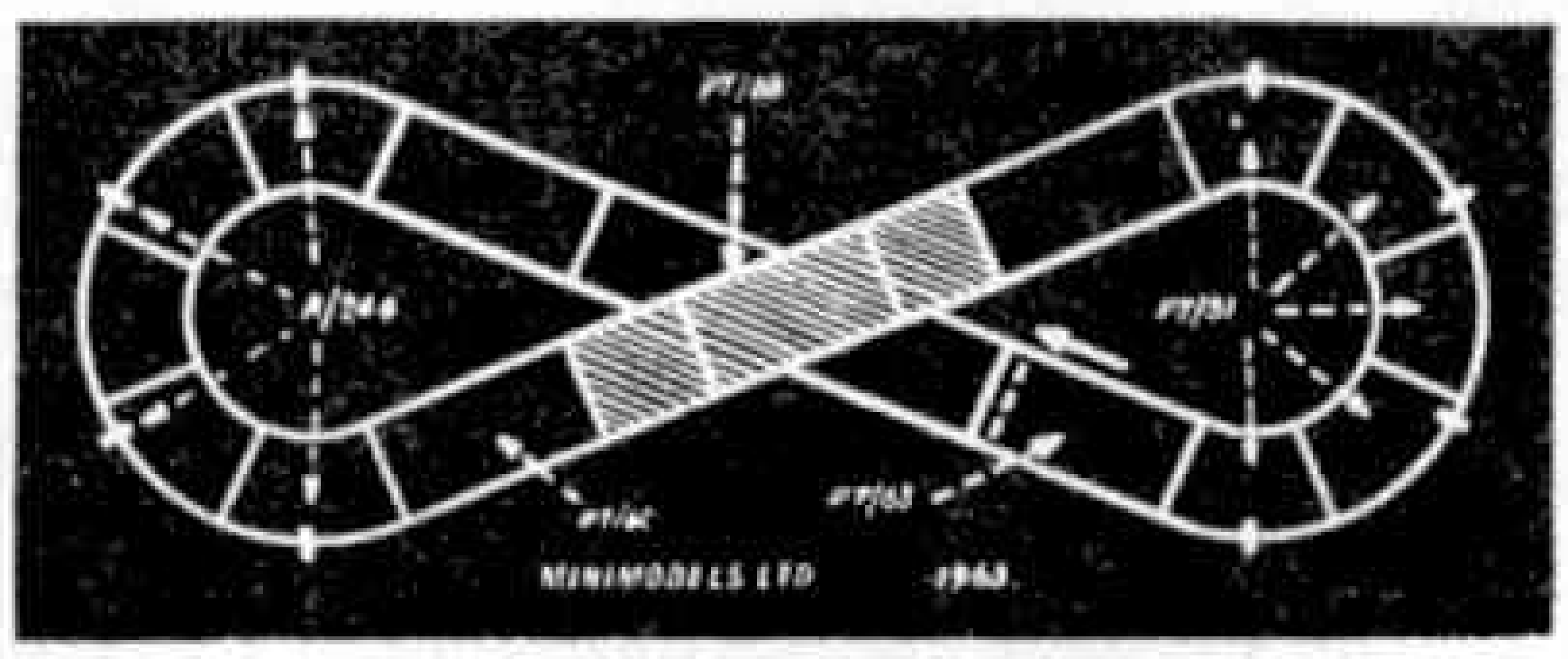

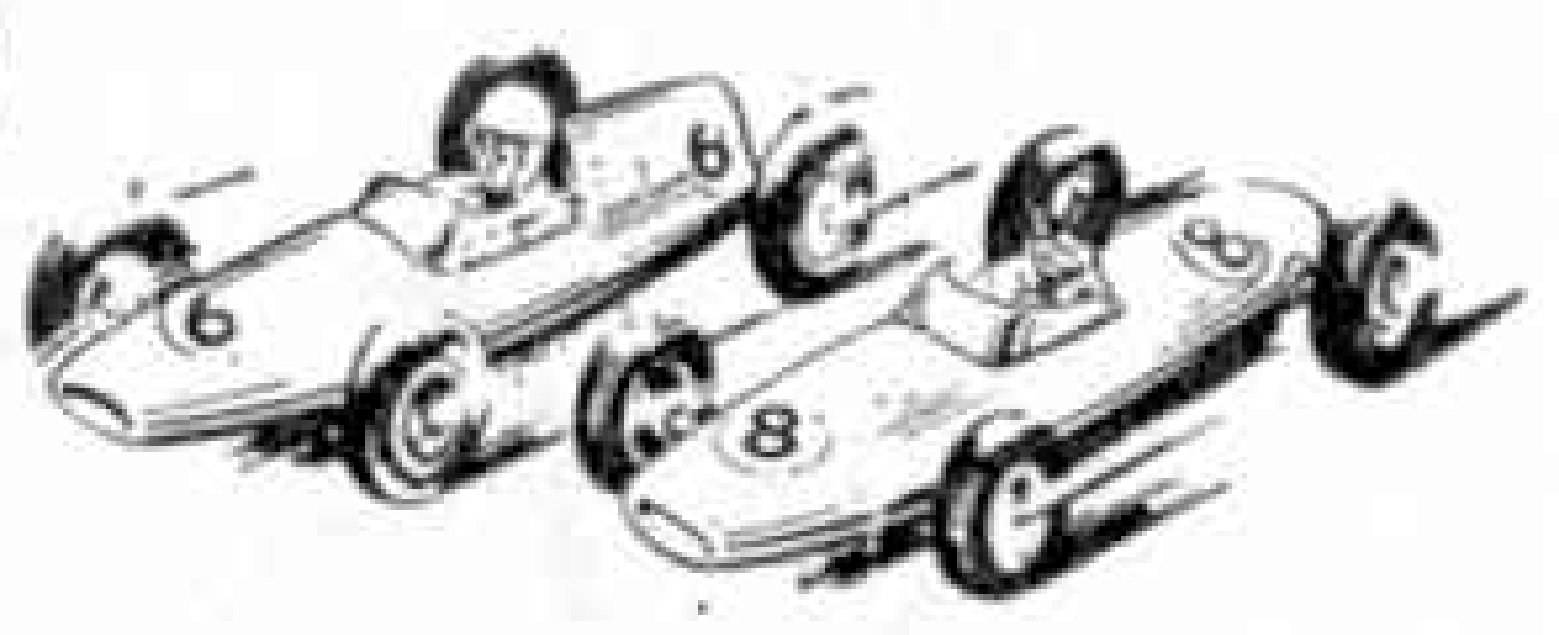

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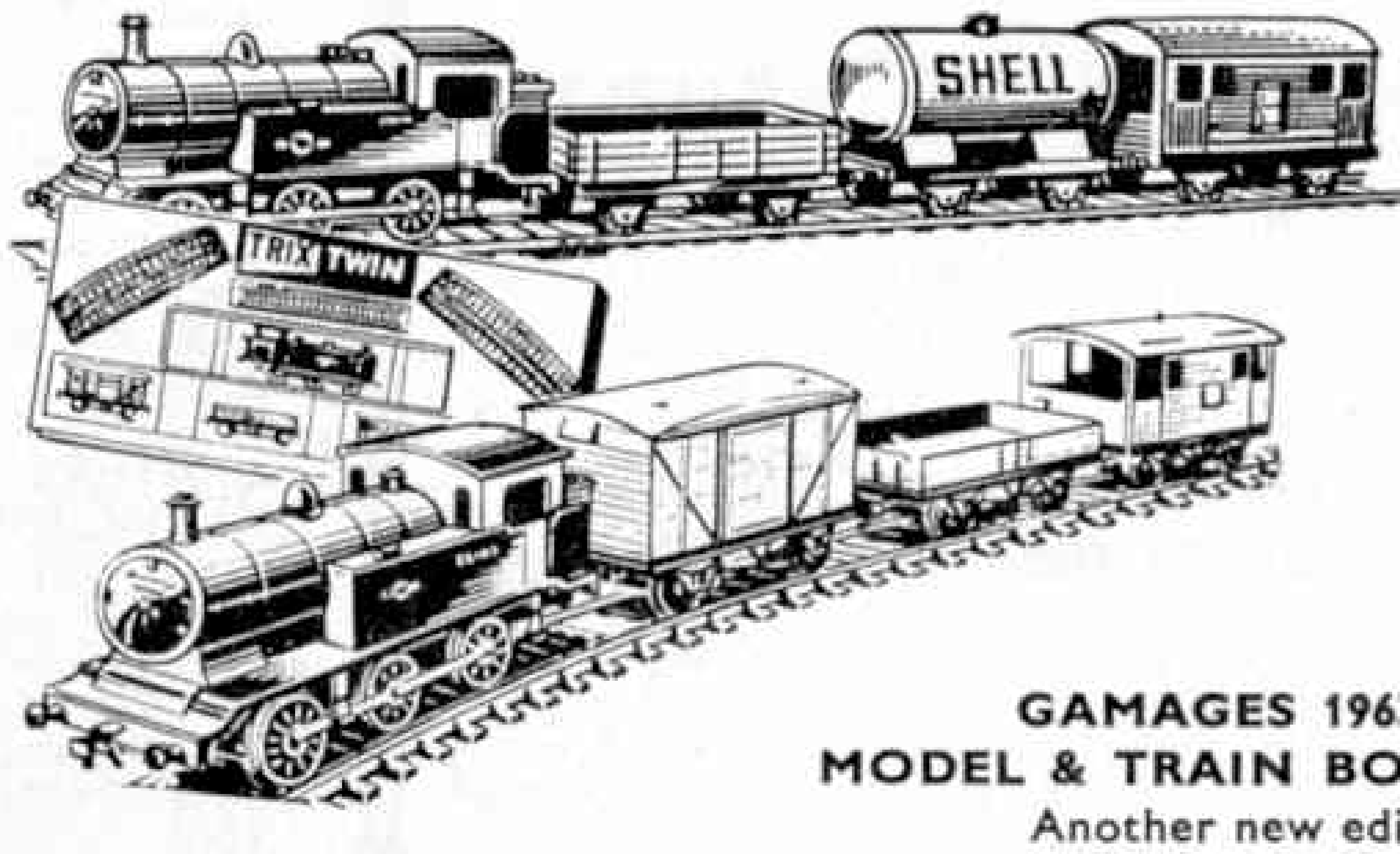

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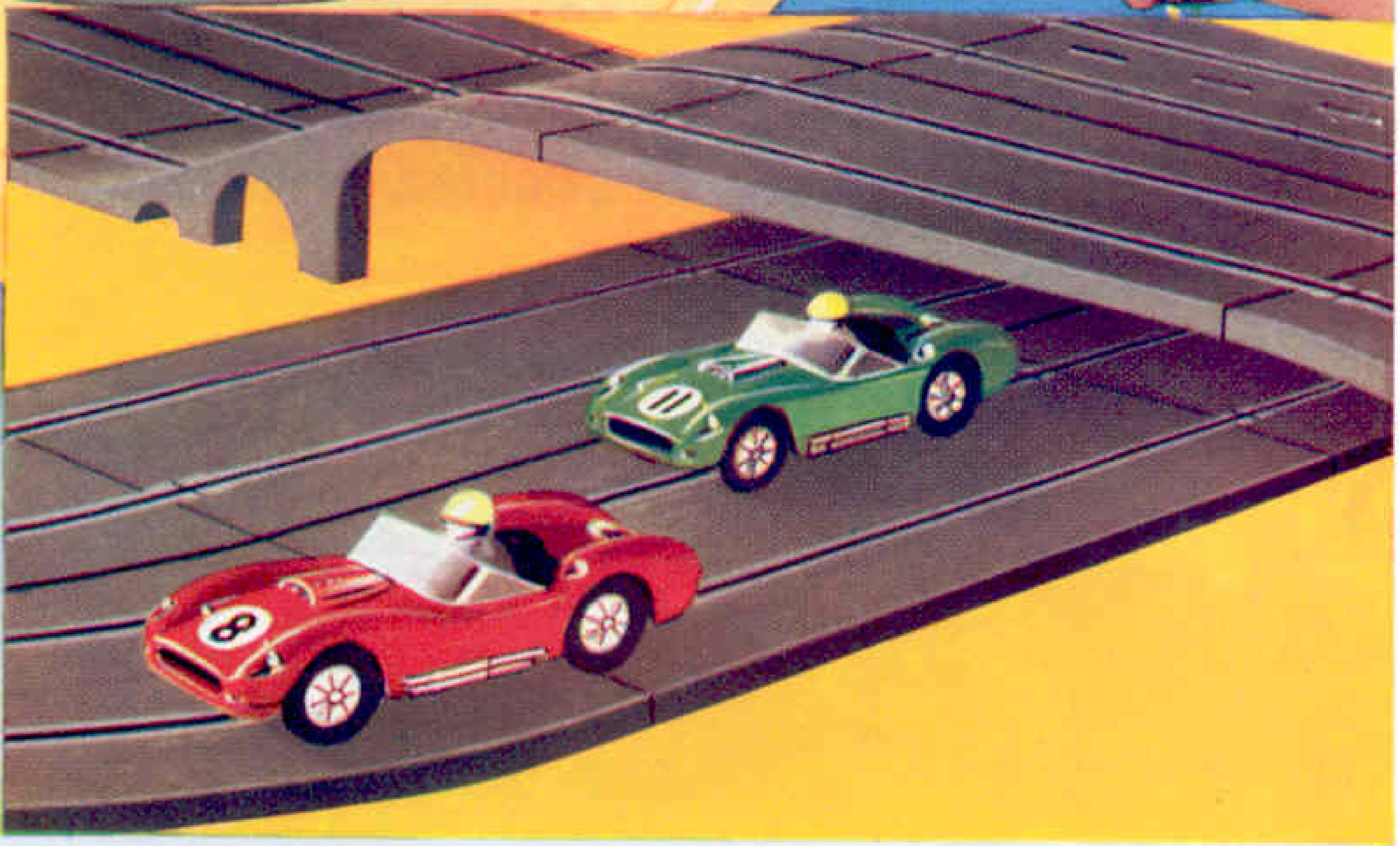

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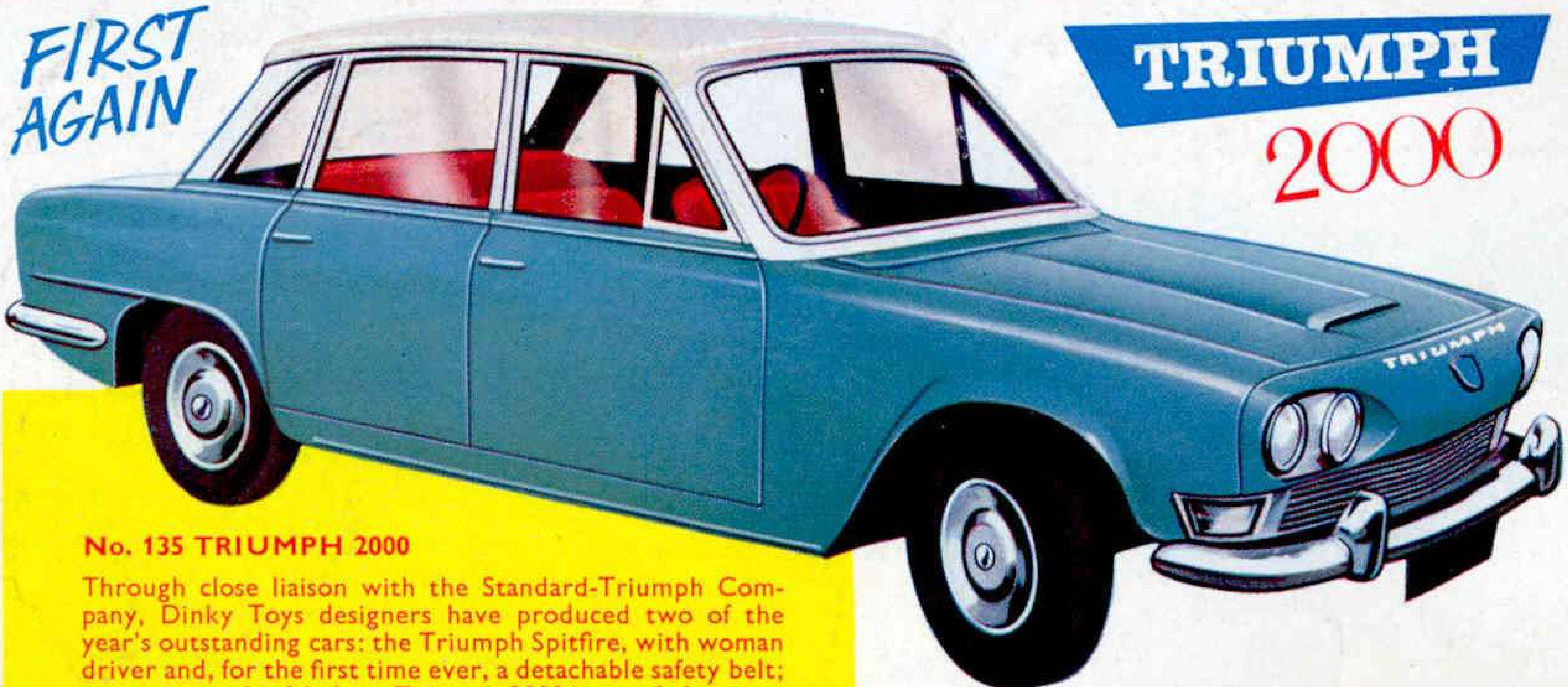

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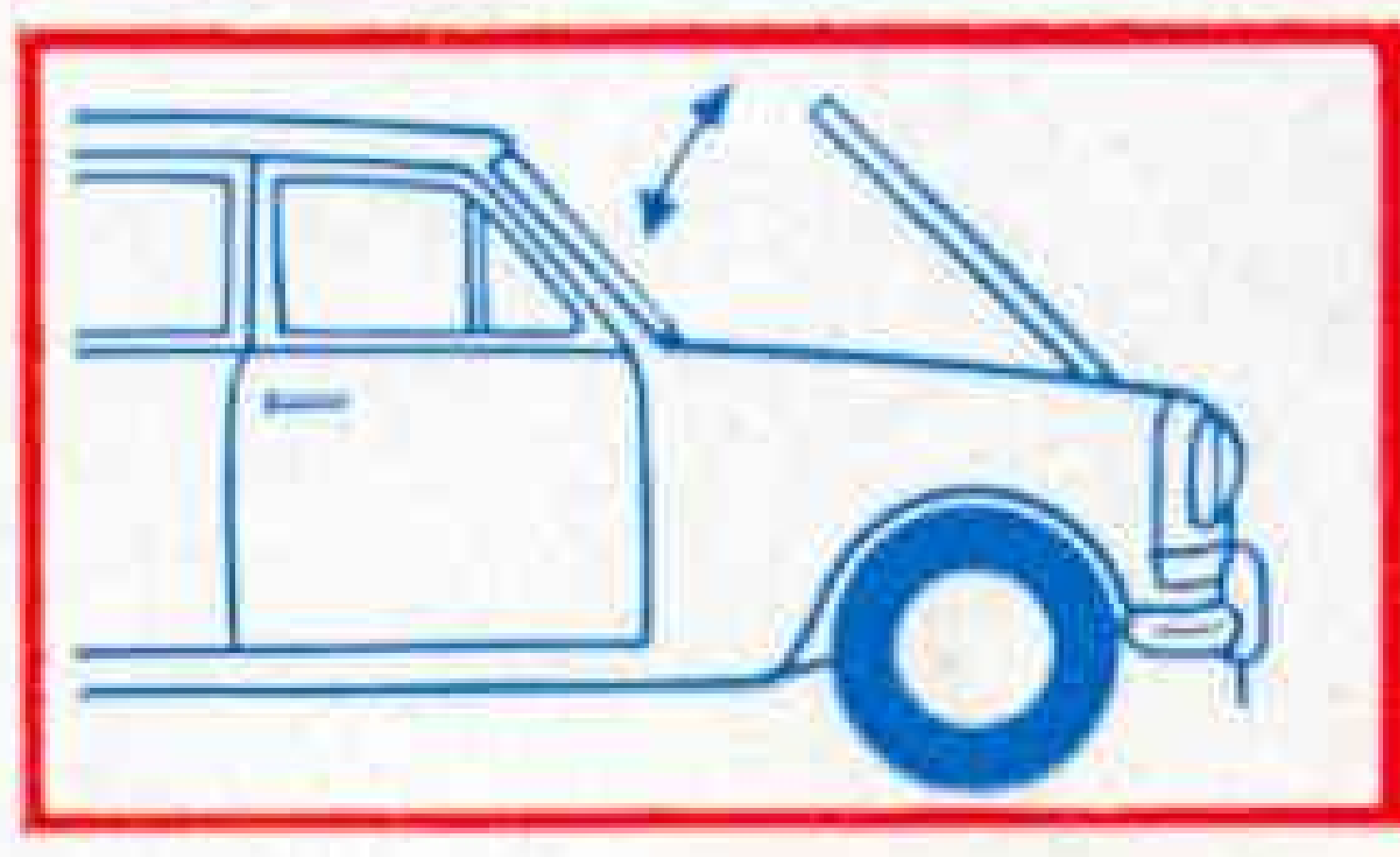

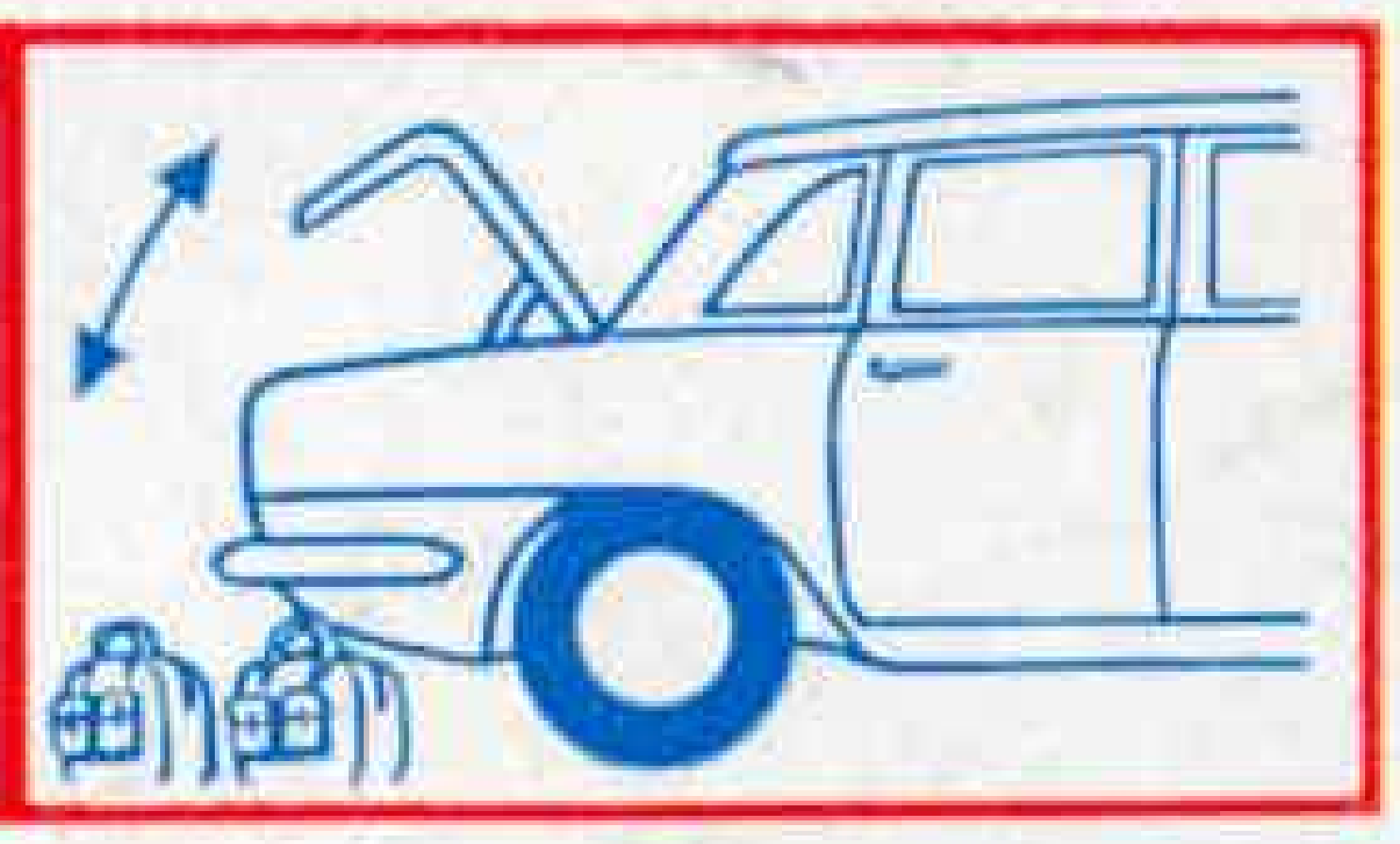

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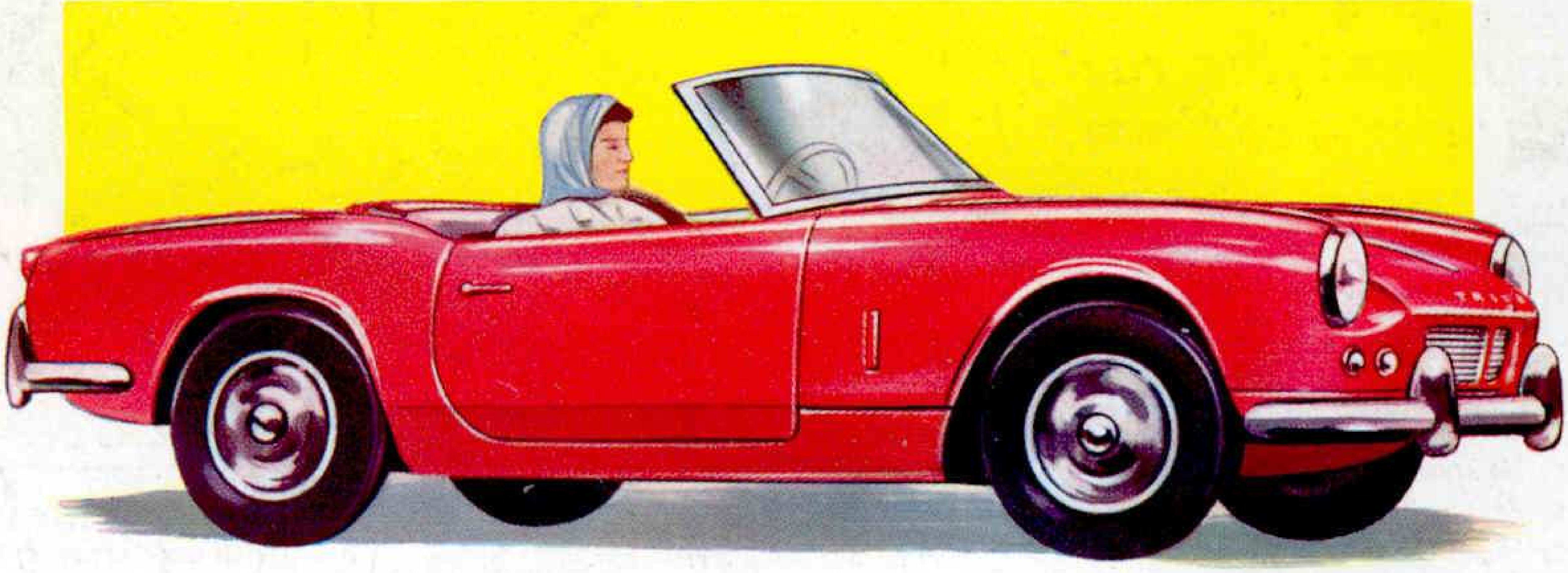

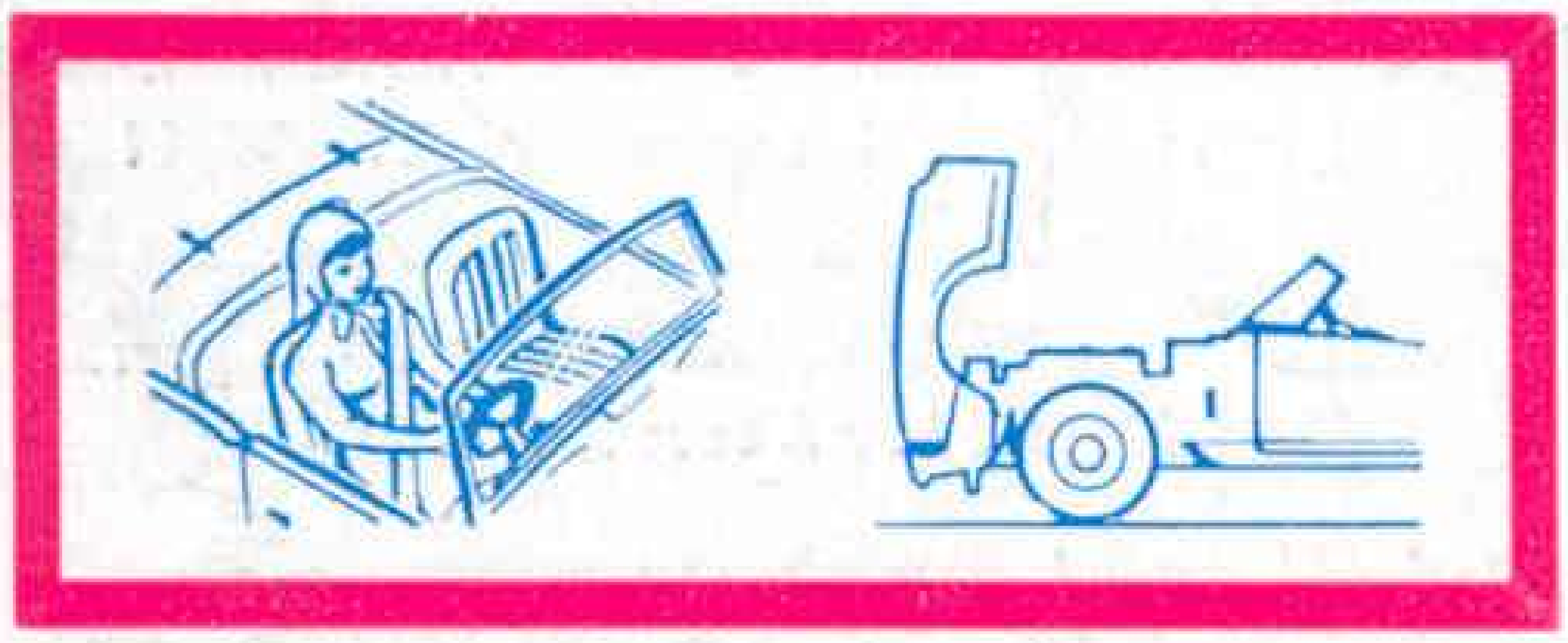

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